2005 STANDARD DRAWINGS

http://www.udot.utah.gov/index.php/m=c/tid=1091

Change 6, March 2, 2006

Memorandum UTAH DEPARTMENT OF TRANSPORTATION

DATE: March 2, 2006

TO: Region Directors
Project Engineers
Project Design Engineers
Project Managers
Consultants and Contractors

FROM: Barry Axelrod, CDT
Standards and Specifications

SUBJECT: 2005 Standard Drawings [U.S. Standard Unit (Inch-Pound Units)] Change 6, Dated March 2, 2006

A new index and updated drawings are attached. Please take the following action with respect to the attached pages.

REMOVE	**INSERT**
Cover	Cover - revised for Change Six
N/A	Memo - Insert after cover
Index	Index - revised
Listing	Listing of Revised Standard Drawings, w/Changes 1, 2, 3, 4, 5, & 6
Sheet 1B	Sheet 1B - revised
Sheet 1C	Sheet 1C - revised
AT 7	AT 7- revised
AT 11	AT 11- revised
BA 1A	BA 1A- revised
DG 5	None - deleted
None	DG 5A - new
None	DG 5B - new
None	DG 5C - new
DG 6	DG 6 - revised
DG 9	DG 9 - revised
GW 5A	GW 5A - revised
GW 5B	GW 5B - revised
SL 1A	SL 1A - revised
SL 1B	SL 1B - revised
SL 2	SL 2- revised
SL 3	SL 3 - revised
SL 4	SL 4 - revised
SL 5	SL 5 - revised
SL 8	SL 8 - revised
SL 10	SL 10 - revised

SL 11	SL 11 - revised
SL 13	SL 13 - revised
ST 5	ST 5 - revised
SW 4B	SW 4B - revised

Electronic files for all Standards Drawings are available on the Internet from the "2005 Standards" Web page, under "2005 Standard Drawings." Individual files are available in two locations. For Microstation DGN format files download individual files from the "2005 Individual Standard Drawings (DGN)" link. For Adobe PDF format files download individual and series files from the "2005 Individual Standard Drawings (PDF)" link. The Series files are zipped in an EXE file. The entire set of drawings is available in Adobe pdf format in six files from the same area as the "2005 Current Drawings" link. The following page shows a break down of the six parts and the drawing series included in each part.

Any changes made to a digitally signed UDOT Standard Drawing Microstation DGN files automatically invalids the digital signatures.

Please note that the 2005 Standards are still in effect. There is no plan to issue a new set of Standards for a 2006 version.

If you have any questions or problems with the electronic files contact me at 801-964-4570 or by email at baxelrod@utah.gov.

Because of file size the 2005 Standard Drawings have been split into six files. The contents of each part are listed below.

Part 1 (Updated as part of Change 1, 2, 3, 4, 5, and 6)
Index
Sheets 1B and 1C
AT Series Drawings
BA Series Drawings

Part 2 (Updated as part of Change 1, 2, 3, 4, and 5)
CB Series Drawings
CC Series Drawings
DB Series Drawings

Part 3 (Updated as part of Change 1, 2, 4 and 6)
DD Series Drawings
DG Series Drawings
EN Series Drawings

Part 4 (Updated as part of Change 1, 2, 3, and 6)
FG Series Drawings
GF Series Drawings
GW Series Drawings

Part 5 (Updated as part of Change 2, 4, and 6)
PV Series Drawings
SL Series Drawings
SN Series Drawings

Part 6 (Updated as part of Change 1 and 6)
ST Series Drawings
SW Series Drawings
TC Series Drawings

STANDARD DRAWINGS INDEX (Change 6, Dated 03/02/06)
UTAH DEPARTMENT OF TRANSPORTATION

X	NUMBER	TITLE	CURRENT DATE
		Advanced Traffic Management System (AT)	
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___	AT 3	Ramp Meter Sign Panel	02/24/05
___	AT 4	Typical Ramp Meter Signal Head Mounting	04/28/05
___	AT 5	Ramp Meter Loop Installation	02/24/05
___	AT 6	Conduit Details	02/24/05
___	AT 7	Polymer-Concrete Junction Box Details	**02/23/06**
___	AT 8	ATMS Cabinet	02/24/05
___	AT 9	ATMS Cabinet Disconnect And Transformer Frame	02/24/05
___	AT 10	CCTV Mounting Details	02/24/05
___	AT 11	CCTV Pole Details	**02/23/06**
___	AT 12	CCTV Pole Foundation For Dedicated CCTV Pole	02/24/05
___	AT 13	Not Used	
___	AT 14	Weigh In Motion Piezo Details	02/24/05
___	AT 15	RWIS Site And Foundation Details	02/24/05
___	AT 16	RWIS Tower Base And Service Pad Layout	02/24/05
___	AT 17	Ground Rod Installation And Tower Grounding	02/24/05
___	AT 18	TMS Detection Zone Layout	02/24/05
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___	BA 1C	Precast Concrete Barrier Terminal For Speed ≤ 40 MPH	01/01/05
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___	BA 4A	W-Beam Guardrail Hardware	01/01/05
___	BA 4B	W-Beam Guardrail Transition	08/25/05
___	BA 4C	W-Beam Guardrail Transition Curb Section	02/24/05
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___	CB 3	Shallow Catch Basin	04/28/05
___	CB 4	Open Curb Shallow Catch Basin	01/01/05
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___	CB 5B	Standard Catch Basin and Cleanout Box Section	01/01/05
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___	CB 9B	Standard Catch Basin And Cleanout Box Section Details	01/01/05
___	CB 9C	Standard Catch Basin And Cleanout Box Schedule Of Installation 18” to 42” RCP 12” to 48” CMP	01/01/05
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___	CC 4	Details For Placement Crash Cushions Type A, B, And D	01/01/05
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___	CC 5C	Grading And Placement Details Crash Cushion Type C “FLEAT-MT”	10/27/05
___	CC 6	Crash Cushion Type E Sand Barrel Details	01/01/05
___	CC 7A	Grading And Installation Details Crash Cushion Type F Quad Trend 350	02/24/05
___	CC 7B	Crash Cushion Type F BEAT-SSCC	08/25/05
___	CC 8A	Grading And Installation Details Crash Cushion Type G	04/28/05

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___	CC 9A	Grading And Installation Details Crash Cushion Type H	04/28/05
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___	DB 1E	Standard Diversion Box Three Gate Box Sections For 18" DIA. or 24" DIA. Pipe	01/01/05
___	DB 1F	Standard Diversion Box Three Gate Box Sections For 18" DIA. or 24" DIA. Pipe	01/01/05
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___	DB 2B	Standard Diversion Box w/Interchangeable Walls, Quantities Schedule	01/01/05
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___	DB 3B	Standard Diversion Box With Manhole Cover Up To 42" RCP And Up To 54" CMP	01/01/05
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___	DD 3	Climbing Lanes	01/01/05
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___	DD 5	Entrance And Exit Ramps At Crossroads	01/01/05

___	DD 6	Entrance And Exit Ramp Geometrics	01/01/05
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___	DD 10	Railroad Clearances At Highway Overpass Structures	01/01/05
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___	EN 2	Temporary Erosion Control (Silt Fence)	08/25/05
___	EN 3	Temporary Erosion Control (Slope Drain And Temporary Berm)	08/25/05
___	EN 4	Temporary Erosion Control (Drop Inlet Barriers)	08/25/05
___	EN 5	Temporary Erosion Control (Pipe Inlet And Curb Inlet Barriers)	08/25/05
___	EN 6	Temporary Erosion Control (Sediment Trap and Stabilized Construction Entrance)	08/25/05
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___	FG 2A	Right Of Way Fence And Gates (Metal Post)	01/01/05
___	FG 2B	Right Of Way Fence And Gates (Metal Post)	01/01/05
___	FG 3	Swing Gates Type I For Gates Less Than 17’	02/24/05
___	FG 4A	Deer Crossing Details	04/28/05
___	FG 4B	Deer Ramp Details	04/28/05
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___	GF 6	Manhole Steps	01/01/05
___	GF 7	Standard Screw Gate And Frame	01/01/05
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___	GF 9	28” x 24” Directional Flow Grate And Frame	01/01/05
___	GF 10	Standard Trash Racks 90 ° X-ing Angle	01/01/05
___	GF 11	Standard Trash Racks	01/01/05
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___	GF 13	Open Curb Inlet Grate and Frame	01/01/05
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___	GW 4	Concrete Driveways And Sidewalks	01/01/05
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___	GW 5B	Pedestrian Access	**02/23/06**
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___	PV 9	Dowel Bar Retrofit	01/01/05

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___	SL 1B	Traffic Signal Mast Arm Pole And Luminaire Extension	**02/23/06**

___	SL 2	Traffic Signal Mast Arm Details 30’ Thru 75’	**02/23/06**
___	SL 3	Underground Service Pedestal Details	**02/23/06**
___	SL 4	Traffic Signal Mast Arm Pole Foundation	**02/23/06**
___	SL 5	Traffic Signal Pole	**02/23/06**
___	SL 6	Pole Mounted Power Source Details	01/01/05
___	SL 7	Span Wire Signal Pole Details	01/01/05
___	SL 8	Signal Head Details	**02/23/06**
___	SL 9	Pedestrian Signal Assembly	01/01/05
___	SL 10	Traffic Signal Controller Base Details	**02/23/06**
___	SL 11	Traffic Signal Loop Detector Details	**02/23/06**
___	SL 12	Traffic Counting Loop Detector Details	04/28/05
___	SL 13	Video Detection Camera Mount	**02/23/06**
___	SL 14	Highway Luminaire Pole Ground Mount	08/25/05
___	SL 15	Luminaire Slip Base Details	08/25/05
___	SL 16	Highway Luminaire Pole Barrier Mount	01/01/05
___	SL 17	Highway Luminaire Pole Foundation Extension	01/01/05
___	SL 18	Single Transformer Substation Details	01/01/05

Signs (SN)

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___	SN 2	School Speed Limit Assembly	01/01/05
___	SN 3	Overhead School Speed Limit Assembly	01/01/05
___	SN 4	Flashing Stop Sign	01/01/05
___	SN 5	Typical Installation For Milepost Signs	01/01/05
___	SN 6	Speed Reduction Sign Sequence	01/01/05
___	SN 7	Placement of Ground Mounted Signs	01/01/05
___	SN 8	Ground Mounted Timber Sign Post (P1)	04/28/05
___	SN 9	Ground Mounted Tubular Steel Sign Post (P2)	01/01/05
___	SN 10	Ground Mounted Square Steel Sign Post (P3)	01/01/05
___	SN 11	Slipbase Ground Mounted Tubular Steel Sign Post (P4)	04/28/05
___	SN 12A	Ground Mounted Sign Installation Details	08/25/05
___	SN 12B	Ground Mounted Sign Installation Details	01/01/05
___	SN 12C	Ground Mounted Sign Installation Details	01/01/05

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___	ST 3	Typical Pavement Markings	01/01/05
___	ST 4	Crosswalks, Parking And Intersection Approaches	01/01/05
___	ST 5	Painted Median And Auxiliary Lane Details	**02/23/06**
___	ST 6	Passing/Climbing Lanes Traffic Control	01/01/05
___	ST 7	Pavement Markings And Signs At Railroad Crossing	01/01/05
___	ST 8	Plowable Pavement Markers	01/01/05
___	ST 9	School Crossing And School Message	01/01/05

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___	SW 4B	Precast Concrete Retaining/Noise Wall 2 Of 2	**02/23/06**

Traffic Control (TC)

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___	TC 3	Traffic Control Project Limit Signing	01/01/05
___	TC 4	Traffic Control Urban Intersections With Roadways Under 50 MPH	01/01/05
___	TC 5	Traffic Control Urban Intersections With Roadways Under 50 MPH	01/01/05
___	TC 6	Traffic Control Pedestrian Routing	01/01/05
___	TC 7	Traffic Control Road Closed, Detour	01/01/05
___	TC 8	Traffic Control Lane Closure	01/01/05
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___	TC 11	Traffic Control Exit Ramp Gore	01/01/05
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___	TC 13	Traffic Control Shoulder-Haul Road	01/01/05
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___	TC 15	Traffic Control 2 Lane/2 Way Seal Coat With Cover Material	01/01/05
___	TC 16	Traffic Control Pavement Marking	01/01/05

Listing of Revised Standard Drawings

Change One

Revised February 24, 2005

AT 1	Legend Sheet	02/24/2005
AT 2	Ramp Meter Details	02/24/2005
AT 3	Ramp Meter Sign Panel	02/24/2005
AT 5	Ramp Meter Loop Installation	02/24/2005
AT 6	Conduit Details	02/24/2005
AT 7	Polymer-Concrete Junction Box Details	02/24/2005
AT 8	ATMS Cabinet	02/24/2005
AT 9	ATMS Cabinet Disconnect And Transformer Frame	02/24/2005
AT 10	CCTV Mounting Details	02/24/2005
AT 11	CCTV Pole Details	02/24/2005
AT 12	CCTV Pole Foundation For Dedicated CCTV Pole	02/24/2005
AT 13	Deleted	N/A
AT 14	Weigh In Motion Piezo Details	02/24/2005
AT 15	RWIS Site And Foundation Details	02/24/2005
AT 16	RWIS Tower Base And Service Pad Layout	02/24/2005
AT 17	Ground Rod Installation And Tower Grounding	02/24/2005
AT 18	TMS Detection Zone Layout	02/24/2005
BA 3	Deleted	N/A
BA 3A	Cast In Place Constant Slope Barrier	02/24/2005
BA 3B	Precast Concrete Constant Slope Transition Section For Crash Cushion And W-Beam Guardrail	02/24/2005
BA 4B	W-Beam Guardrail Transition	02/24/2005
BA 4C	W-Beam Guardrail Transition Curb Section	02/24/2005
CC 7	Deleted	N/A
CC 7A	Grading And Installation Details Crash Cushion Type F Quad Trend 350	02/24/2005
CC 7B	Reserved For Future Use	N/A
CC 8	Deleted	N/A
CC 8A	Grading And Installation Details Crash Cushion Type G	02/24/2005
CC 8B	Grading And Installation Details For “3R” Projects Crash Cushion Type G	02/24/2005
CC 9A	Grading And Installation Details Crash Cushion Type H	02/24/2005
CC 9B	Grading And Installation Details Crash Cushion Type H (Parabolic Flare)	02/24/2005
DD 4	Geometric Design for Freeways (Roadway)	02/24/2005
FG 3	Swing Gates Type I For Gates Less Than 17’	02/24/2005
ST 5	Painted Median And Auxiliary Lane Details	02/24/2005

Change Two

Revised April 28, 2005

AT 4	Typical Ramp Meter Signal Head Mounting	04/28/2005
CB 1	Curb and Gutter Inlet	04/28/2005
CB 2	Open Curb Inlet	04/28/2005
CB 3	Shallow Catch Basin	04/28/2005
CC 8A	Grading And Installation Details Crash Cushion Type G	04/28/2005
CC 8B	Grading And Installation Details For “3R” Projects Crash Cushion Type G	04/28/2005
CC 9A	Grading And Installation Details Crash Cushion Type H	04/28/2005
CC 9B	Grading And Installation Details Crash Cushion Type H (Parabolic Flare)	04/28/2005
DD 4	Geometric Design for Freeways (Roadway)	04/28/2005
FG 4	Deleted	N/A
FG 4A	Deer Crossing Details	04/28/2005
FG 4B	Deer Ramp Details	04/28/2005
SL 12	Traffic Counting Loop Detector Details	04/28/2005
SL 13	Video Detection Camera Mount	04/28/2005
SN 8	Ground Mounted Timber Sign Post (P1)	04/28/2005
SN 11	Slipbase Ground Mounted Tubular Steel Sign Post (P4)	04/28/2005

Change Three

Revised June 30, 2005

CB 5A	Standard Catch Basin and Cleanout Box	06/30/2005
GW 5A	Pedestrian Access	06/30/2005
GW 5B	Pedestrian Access	06/30/2005
GW 5C	Pedestrian Access	06/30/2005

Change Four

Revised August 25, 2005

BA 1B	Precast Concrete Full Barrier Standard Section	08/25/2005
BA 3B	Precast Concrete Constant Slope Transition Section	08/25/0205
	For Crash Cushion And W-Beam Guardrail	08/25/0205
BA 4B	W-Beam Guardrail Transition	08/25/2005
CC 7B	Crash Cushion Type F BEAT-SSCC	08/25/2005
DG 1	Fill Height for Metal Pipe (Steel)	08/25/2005
EN 1	Temporary Erosion Control (Check Dams)	08/25/2005
EN 2	Temporary Erosion Control (Silt Fence)	08/25/2005
EN 3	Temporary Erosion Control (Slope Drain And Temporary Berm)	08/25/2005
EN 4	Temporary Erosion Control (Drop Inlet Barriers)	08/25/2005
EN 5	Temporary Erosion Control (Pipe Inlet And Curb Inlet Barriers)	08/25/2005
EN 6	Temporary Erosion Control (Sediment Trap and Stabilized Construction Entrance)	08/25/2005
EN 7	Temporary Erosion Control (Straw Bale Barrier)	08/25/2005
SL 14	Highway Luminaire Pole Ground Mount	08/25/2005
SL 15	Luminaire Slip Base Details	08/25/2005
SN 12A	Ground Mounted Sign Installation Details	08/25/2005

Change Five

Revised October 27, 2005

BA 4D	W-Beam Guardrail Anchor Type I	10/27/2005
BA 4R	W-Beam Median Barrier Transition	10/27/2005
CC 5	Deleted	N/A
CC 5A	Grading And Placement Details Crash Cushion Type C “Brakemaster”	10/27/2005
CC 5B	Grading And Placement Details Crash Cushion Type C “C.A.T”	10/27/2005
CC 5C	Grading And Placement Details Crash Cushion Type C “FLEAT-MT”	10/27/2005

Change Six

Revised February 23, 2006

AT 7	Polymer-Concrete Junction Box Details	02/23/2006
AT 11	CCTV Pole Details	02/23/2006
BA 1A	Precast Concrete Full Barrier Standard Section	02/23/2006
DG 5	Deleted	N/A
DG 5A	Plastic Pipe Culvert Installation	02/23/2006
DG 5B	Metal Pipe Or Pipe Arch Culvert Installation	02/23/2006
DG 5C	Precast Concrete Pipe Culvert Installation	02/23/2006
DG 6	Safety Slope End Section For Circular and Arched Pipes	02/23/2006
DG 9	Miscellaneous Pipe Details	02/23/2006
GW 5A	Pedestrian Access	02/23/2006
GW 5B	Pedestrian Access	02/23/2006
SL 1A	Traffic Signal Mast Arm Pole And Luminaire Extension	02/23/2006
SL 1B	Traffic Signal Mast Arm Pole And Luminaire Extension	02/23/2006
SL 2	Traffic Signal Mast Arm Details 30’ Thru 75’	02/23/2006
SL 3	Underground Service Pedestal Details	02/23/2006
SL 4	Traffic Signal Mast Arm Pole Foundation	02/23/2006
SL 5	Traffic Signal Pole	02/23/2006
SL 8	Signal Head Details	02/23/2006
SL 10	Traffic Signal Controller Base Details	02/23/2006
SL 11	Traffic Signal Loop Detector Details	02/23/2006
SL 13	Video Detection Camera Mount	02/23/2006
ST 5	Painted Median And Auxiliary Lane Details	02/23/2006
SW 4B	Precast Concrete Retaining/Noise Wall 2 Of 2	02/23/2006

UTAH DEPARTMENT OF TRANSPORTATION

STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

	DWG. NO.	DESCRIPTION	DATE
		Advanced Traffic Management System (AT)	
	AT 1	LEGEND SHEET	02-24-05
	AT 2	RAMP METER DETAILS	02-24-05
	AT 3	RAMP METER SIGN PANEL	02-24-05
	AT 4	TYPICAL RAMP METER SIGNAL HEAD MOUNTING	04-28-05
	AT 5	RAMP METER LOOP INSTALLATION	02-24-05
	AT 6	CONDUIT DETAILS	02-24-05
	AT 7	POLYMER-CONCRETE JUNCTION BOX DETAILS	02-23-06
	AT 8	ATMS CABINET	02-24-05
	AT 9	ATMS CABINET DISCONNECT AND TRANSFORMER FRAME	02-24-05
	AT 10	CCTV MOUNTING DETAILS	02-24-05
	AT 11	CCTV POLE DETAILS	02-23-06
	AT 12	CCTV POLE FOUNDATION FOR DEDICATED CCTV POLE	02-24-05
	AT 13	NOT USED	
	AT 14	WEIGHT IN MOTION PIEZO DETAILS	02-24-05
	AT 15	RWIS SITE AND FOUNDATION DETAILS	02-24-05
	AT 16	RWIS TOWER BASE AND SERVICE PAD LAYOUT	02-24-05
	AT 17	GROUND ROD INSTALLATION AND TOWER GROUNDING	02-24-05
	AT 18	TMS DETECTION ZONE LAYOUT	02-24-05
		Barriers (BA)	
	BA 1A	PRECAST CONCRETE FULL BARRIER STANDARD SECTION	02-23-06
	BA 1B	PRECAST CONCRETE FULL BARRIER STANDARD SECTION	08-25-05
	BA 1C	PRECAST CONCRETE BARRIER TERMINAL FOR SPEED ≤40 MPH	01-01-05
	BA 1D	PRECAST CONCRETE FULL SECTION MEDIAN INSTALLATION	01-01-05
	BA 1E	PRECAST CONCRETE FULL SECTION SHOULDER APPLICATIONS	01-01-05
	BA 2	PRECAST CONCRETE HALF BARRIER STANDARD SECTION	01-01-05
	BA 3A	CAST IN PLACE CONSTANT SLOPE BARRIER	02-24-05
	BA 3B	PRECAST CONCRETE CONSTANT SLOPE TRANSITION SECTION FOR CRASH CUSHION AND W-BEAM GUARDRAIL	08-25-05
	BA 4A	W-BEAM GUARDRAIL HARDWARE	01-01-05
	BA 4B	W-BEAM GUARDRAIL TRANSITION	08-25-05
	BA 4C	W-BEAM GUARDRAIL TRANSITION CURB SECTIONS	02-24-05
	BA 4D	W-BEAM GUARDRAIL ANCHOR TYPE I	10-27-05
	BA 4E	W-BEAM GUARDRAIL INSTALLATIONS	01-01-05
	BA 4F	W-BEAM GUARDRAIL TYPICALS DIVIDED ROADWAYS	01-01-05
	BA 4G	W-BEAM GUARDRAIL TYPICAL MULTILANE ARTERIAL	01-01-05
	BA 4H	W-BEAM GUARDRAIL TYPICAL 2 LANE 2 WAY	01-01-05
	BA 4I	W-BEAM GUARDRAIL BURIED IN BACKSLOPE TERMINAL	01-01-05
	BA 4J	W-BEAM GUARDRAIL BURIED IN BACKSLOPE TERMINAL WITH RUB RAIL	01-01-05
	BA 4K	W-BEAM GUARDRAIL BURIED IN BACKSLOPE TERMINAL ANCHOR	01-01-05
	BA 4L	W-BEAM GUARDRAIL CURVE DETAILS	01-01-05
	BA 4M	W-BEAM GUARDRAIL NESTED GUARDRAIL 12' 6" SPAN	01-01-05
	BA 4N	W-BEAM GUARDRAIL NESTED GUARDRAIL 18' 9" SPAN	01-01-05
	BA 4O	W-BEAM GUARDRAIL NESTED GUARDRAIL 25' SPAN	01-01-05
	BA 4P	W-BEAM GUARDRAIL WITH PRECAST BARRIER FOR SPAN > 25'	01-01-05
	BA 4Q	NOT USED	
	BA 4R	W-BEAM GUARDRAIL MEDIAN BARRIER TRANSITION	10-27-05

	DWG. NO.	DESCRIPTION	DATE
		Catch Basins and Cleanouts (CB)	
	CB 1	CURB AND GUTTER INLET	04-28-05
	CB 2	OPEN CURB INLET	04-28-05
	CB 3	SHALLOW CATCH BASIN	04-28-05
	CB 4	OPEN CURB SHALLOW CATCH BASIN	01-01-05
	CB 5A	STANDARD CATCH BASIN AND CLEANOUT BOX	06-30-05
	CB 5B	STANDARD CATCH BASIN AND CLEANOUT BOX SECTION	01-01-05
	CB 6A	DROP INLET TYPE "A"	01-01-05
	CB 6B	BERM APRON WITH DROP INLET TYPE "A"	01-01-05
	CB 7A	DROP INLET TYPE "B"	01-01-05
	CB 7B	NORMAL APRON WITH DROP INLET TYPE "B"	01-01-05
	CB 8A	DOUBLE CATCH BASIN	01-01-05
	CB 8B	DOUBLE CATCH BASIN	01-01-05
	CB 9A	STANDARD CATCH BASIN AND CLEANOUT BOX SITUATION AND LAYOUT	01-01-05
	CB 9B	STANDARD CATCH BASIN AND CLEANOUT BOX SECTION DETAILS	01-01-05
	CB 9C	STANDARD CATCH BASIN AND CLEANOUT BOX SCHEDULE OF INSTALLATION 18" TO 42" RCP 12" TO 48" CMP	01-01-05
	CB 9D	STANDARD CATCH BASIN AND CLEANOUT BOX SCHEDULE OF INSTALLATION 48" TO 66" RCP 60" TO 78" CMP	01-01-05
	CB 10A	STANDARD CATCH BASIN AND CLEANOUT BOX SITUATION AND LAYOUT	01-01-05
	CB 10B	STANDARD CATCH BASIN AND CLEANOUT BOX SECTION DETAILS	01-01-05
	CB 10C	STANDARD CATCH BASIN AND CLEANOUT BOX SCHEDULE OF INSTALLATION 42" TO 60" RCP 48" TO 72" CMP	01-01-05
	CB 11	STANDARD MANHOLE	01-01-05
		Crash Cushions (CC)	
	CC 1	CRASH CUSHION MARKINGS	01-01-05
	CC 2	CRASH CUSHION DRAINAGE DETAILS GUIDELINE A	01-01-05
	CC 3	CRASH CUSHION DRAINAGE DETAILS GUIDELINE B	01-01-05
	CC 4	DETAIL FOR PLACEMENT CRASH CUSHIONS TYPE A, B AND D	01-01-05
	CC 5A	GRADING AND PLACEMENT DETAILS CRASH CUSHION TYPE C BRAKEMASTER	10-27-05
	CC 5B	GRADING AND PLACEMENT DETAILS CRASH CUSHION TYPE C C.A.T.	10-27-05
	CC 5C	GRADING AND PLACEMENT DETAILS CRASH CUSHION TYPE C FLEAT-MT	10-27-05
	CC 6	CRASH CUSHION TYPE E SAND BARREL DETAILS	01-01-05
	CC 7A	GRADING AND INSTALLATION DETAILS CRASH CUSHION TYPE F QUAD TREND 350	02-24-05
	CC 7B	CRASH CUSHION TYPE F BEAT-SSCC	08-25-05
	CC 8A	GRADING AND INSTALLATION DETAILS CRASH CUSHION TYPE G	04-28-05
	CC 8B	GRADING AND INSTALLATION DETAILS FOR "3R" PROJECTS CRASH CUSHION TYPE G	04-28-05
	CC 9A	GRADING AND INSTALLATION DETAILS CRASH CUSHION TYPE H	04-28-05
	CC 9B	GRADING AND INSTALLATION DETAILS CRASH CUSHION TYPE H (PARABOLIC FLARE)	04-28-05
		Diversion Boxes (DB)	
	DB 1A	STANDARD DIVERSION BOX/COVER PLATE/GRATING FOR 18" DIA. OR 24" DIA. PIPE	01-01-05
	DB 1B	STANDARD DIVERSION BOX HINGED LID DETAILS FOR 18" DIA. OR 24" DIA. PIPE	01-01-05
	DB 1C	STANDARD DIVERSION BOX BICYCLE-SAFE GRATING DETAILS FOR 18" DIA. OR 24" DIA. PIPE	01-01-05
	DB 1D	STANDARD DIVERSION BOX THREE GATE BOX SECTIONS FOR 18" DIA. OR 24" DIA. PIPE	01-01-05
	DB 1E	STANDARD DIVERSION BOX THREE GATE BOX SECTIONS FOR 18" DIA. OR 24" DIA. PIPE	01-01-05
	DB 1F	STANDARD DIVERSION BOX THREE GATE BOX SECTIONS FOR 18" DIA. OR 24" DIA. PIPE	01-01-05
	DB 2A	STANDARD DIVERSION BOX W/INTERCHANGEABLE WALLS, BOTTOM SLAB, WALLS AND APRON DETAILS	01-01-05
	DB 2B	STANDARD DIVERSION BOX W/INTERCHANGEABLE WALLS, QUANTITIES SCHEDULE	01-01-05

	DWG. NO.	DESCRIPTION	DATE
	DB 2C	STANDARD DIVERSION BOX W/INTERCHANGEABLE WALLS, HAND SLIDE GATE DETAILS	01-01-05
	DB 2D	STANDARD DIVERSION BOX TYPE "G" HAND SLIDE GATE DETAILS	01-01-05
	DB 2E	STANDARD DIVERSION BOX HINGED LID (SOLID COVER PLATE) TYPE "A" DETAILS TYPE I PLAN	01-01-05
	DB 2F	STANDARD DIVERSION BOX HINGED LID (SOLID COVER PLATE) TYPE "A" DETAILS TYPE II PLAN	01-01-05
	DB 2G	STANDARD DIVERSION BOX HINGED LID SOLID COVER TYPE "B" DETAILS	01-01-05
	DB 2H	STANDARD DIVERSION BOX HINGED LID SOLID COVER TYPE "B" AND "C" DETAILS	01-01-05
	DB 3A	STANDARD DIVERSION BOX WITH MANHOLE COVER SITUATION AND LAYOUT	01-01-05
	DB 3B	STANDARD DIVERSION BOX WITH MANHOLE COVER UP TO 42" RCP AND UP TO 54" CMP	01-01-05
	DB 3C	STANDARD DIVERSION BOX WITH MANHOLE COVER 48" TO 72" RCP AND 60" TO 84" CMP	01-01-05
	DB 4	STANDARD TRANSITION CONCRETE LINED DITCH TO PIPE OR DIVERSION BOX	01-01-05
		Design (DD)	
	DD 1	SUPERELEVATION AND WIDENING	01-01-05
	DD 2	SURFACE DITCH, BENCHED SLOPE, AND CUT DITCH DETAILS	01-01-05
	DD 3	CLIMBING LANES	01-01-05
	DD 4	GEOMETRIC DESIGN FOR FREEWAYS (ROADWAY)	04-28-05
	DD 5	ENTRANCE AND EXIT RAMPS AT CROSSROADS	01-01-05
	DD 6	ENTRANCE AND EXIT RAMP GEOMETRICS	01-01-05
	DD 7	FREEWAY CROSSOVER	01-01-05
	DD 8	STRUCTURAL GEOMETRIC DESIGN STANDARDS FOR CLEARANCES	01-01-05
	DD 9	STRUCTURAL GEOMETRIC DESIGN STANDARDS	01-01-05
	DD 10	RAILROAD CLEARANCES AT HIGHWAY OVERPASS STRUCTURES	01-01-05
	DD 11	RURAL MULTI LANE HIGHWAYS OTHER THAN FREEWAYS	01-01-05
	DD 12	RURAL TWO LANE HIGHWAYS	01-01-05
	DD 13	FRONTAGE AND ACCESS ROADS (UNDER 50 ADT)	01-01-05
	DD 14	TYPICAL RURAL 2 LANE ROAD WITH MEDIAN LANE AND DECELERATION LANE FOR INTERSECTING CROSSROADS	01-01-05
		Drainage (DG)	
	DG 1	FILL HEIGHT FOR METAL PIPE (STEEL)	08-25-05
	DG 2	FILL HEIGHT FOR METAL PIPE (ALUMINUM)	01-01-05
	DG 3	MAXIMUM FILL HEIGHT FOR HDPE AND PVC PIPES	01-01-05
	DG 4	PIPE MINIMUM COVER	01-01-05
	DG 5A	PLASTIC PIPE CULVERT INSTALLATION	02-23-06
	DG 5B	METAL PIPE OR PIPE ARCH CULVERT INSTALLATION	02-23-06
	DG 5C	PRECAST CONCRETE PIPE CULVERT INSTALLATION	02-23-06
	DG 6	SAFETY SLOPE END SECTION FOR CIRCULAR AND ARCHED PIPE	02-23-06
	DG 7	GASKETTED JOINTS OR COUPLING BANDS FOR CMP	01-01-05
	DG 8	METAL CULVERT END SECTION	01-01-05
	DG 9	MISCELLANEOUS PIPE DETAILS	01-01-05
		Environmental Controls (EN)	
	EN 1	TEMPORARY EROSION CONTROL (CHECK DAMS)	08-25-05
	EN 2	TEMPORARY EROSION CONTROL (SILT FENCE)	08-25-05
	EN 3	TEMPORARY EROSION CONTROL (SLOPE DRAIN AND TEMPORARY BERM)	08-25-05
	EN 4	TEMPORARY EROSION CONTROL (DROP INLET BARRIERS)	08-25-05
	EN 5	TEMPORARY EROSION CONTROL (PIPE INLET AND CURB INLET BARRIERS)	08-25-05
	EN 6	TEMPORARY EROSION CONTROL (SEDIMENT TRAP AND STABILIZED CONSTRUCTION ENTRANCE)	08-25-05
	EN 7	TEMPORARY EROSION CONTROL (STRAW BALE BARRIER)	08-25-05

☒ MARKED BOXES INDICATE DRAWINGS APPLICABLE TO THIS PROJECT

REVISIONS

NO.	DATE	APPR.	REMARKS
1	02/24/05	B.A.	CHANGE 1
2	04/28/05	B.A.	CHANGE 2
3	06/30/05	B.A.	CHANGE 3
4	08/25/05	B.A.	CHANGE 4
5	10/27/05	B.A.	CHANGE 5
6	02/23/06	B.A.	CHANGE 6

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — FEB.23.2006 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — FEB.23.2006 DATE
DEPUTY DIRECTOR

STANDARD DRAWING INDEX SHEET

STANDARD DRAWING TITLE

STD DWG
1-B

DGN File: L:\Standard_Drawings\Imperial\2005\Approved\Change6\Approved\sheet1b.dgn

01-MAR-2006

UTAH DEPARTMENT OF TRANSPORTATION

STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

	DWG. NO.	DESCRIPTION	DATE
		Fence and Gates (FG)	
	FG 1A	RIGHT OF WAY FENCE AND GATES (WOOD POST)	01-01-05
	FG 1B	RIGHT OF WAY FENCE AND GATES (WOOD POST)	01-01-05
	FG 2A	RIGHT OF WAY FENCE AND GATES (METAL POST)	01-01-05
	FG 2B	RIGHT OF WAY FENCE AND GATES (METAL POST)	01-01-05
	FG 3	SWING GATES TYPE 1 FOR GATES LESS THAN 17'	02-24-05
	FG 4A	DEER CROSSING DETAILS	04-28-05
	FG 4B	DEER RAMP DETAILS	04-28-05
	FG 5	SWING GATES TYPE II FOR GATES WIDER THAN 17'	01-01-05
	FG 6	CHAIN LINK FENCE	01-01-05
		Grates, Frames and Trash Racks (GF)	
	GF 1	MANHOLE FRAME AND GRATED COVER	01-01-05
	GF 2	MANHOLE FRAME AND SOLID COVER	01-01-05
	GF 3	RECTANGULAR GRATE AND FRAME	01-01-05
	GF 4	DIRECTIONAL FLOW GRATE AND FRAME	01-01-05
	GF 5	SOLID COVER AND FRAME	01-01-05
	GF 6	MANHOLE STEPS	01-01-05
	GF 7	STANDARD SCREW GATE AND FRAME	01-01-05
	GF 8	2' x 2' GRATE AND FRAME	01-01-05
	GF 9	28" x 24" DIRECTIONAL FLOW GRATE AND FRAME	01-01-05
	GF 10	STANDARD TRASH RACKS 90° X-ING ANGLE	01-01-05
	GF 11	STANDARD TRASH RACKS	01-01-05
	GF 12	STANDARD TRASH RACKS	01-01-05
	GF 13	OPEN CURB INLET GRATE AND FRAME	01-01-05
	GF 14	SOLID COVER FOR STD DWG DB 1 MS-18 LOADING	01-01-05
	GF 15	STANDARD SCREW GATE AND FRAME	01-01-05
		General Road Work (GW)	
	GW 1	RAISED MEDIAN AND PLOWABLE END SECTION	01-01-05
	GW 2	CONCRETE CURB AND GUTTER	01-01-05
	GW 3	CONCRETE CURB AND GUTTER DETAILS	01-01-05
	GW 4	CONCRETE DRIVEWAYS AND SIDEWALKS	01-01-05
	GW 5A	PEDESTRIAN ACCESS	02-23-06
	GW 5B	PEDESTRIAN ACCESS	02-23-06
	GW 5C	PEDESTRIAN ACCESS	06-30-05
	GW 6	RIGHT OF WAY MARKER	01-01-05
	GW 7	NEWSPAPER AND MAILBOX STOP LAYOUT	01-01-05
	GW 8	NEWSPAPER AND MAILBOX SUPPORT HARDWARE	01-01-05
	GW 9	DELINEATION HARDWARE	01-01-05
	GW 10	DELINEATION APPLICATION	01-01-05
	GW 11	SIDEWALKS AND SHOULDERS ON URBAN ROADWAYS	01-01-05

	DWG. NO.	DESCRIPTION	DATE
		Paving (PV)	
	PV 1	JOINTS FOR HIGHWAYS WITH CONCRETE TRAFFIC LANES AND SHOULDERS	01-01-05
	PV 2	PAVEMENT/APPROACH SLAB DETAILS	01-01-05
	PV 3	CONCRETE PAVEMENT DETAILS FOR URBAN AND INTERSTATE	01-01-05
	PV 4	CONCRETE PAVEMENT DETAILS FOR URBAN AND INTERSTATE	01-01-05
	PV 5	URBAN CONCRETE PAVEMENT DETAILS	01-01-05
	PV 6	RUMBLE STRIPS	01-01-05
	PV 7	RUMBLE STRIPS-TYPICAL APPLICATION	01-01-05
	PV 8	NOT USED	
	PV 9	DOWEL BAR RETROFIT	01-01-05
		Signals (SL)	
	SL 1A	TRAFFIC SIGNAL MAST ARM POLE AND LUMINAIRE EXTENSION	02-23-06
	SL 1B	TRAFFIC SIGNAL MAST ARM POLE AND LUMINAIRE EXTENSION	02-23-06
	SL 2	TRAFFIC SIGNAL MAST ARM DETAILS 30' THRU 75'	02-23-06
	SL 3	UNDERGROUND SERVICE PEDESTAL DETAILS	02-23-06
	SL 4	TRAFFIC SIGNAL MAST ARM POLE FOUNDATION	02-23-06
	SL 5	TRAFFIC SIGNAL POLE	02-23-06
	SL 6	POLE MOUNTED POWER SOURCE DETAILS	01-01-05
	SL 7	SPAN WIRE SIGNAL POLE DETAILS	01-01-05
	SL 8	SIGNAL HEAD DETAILS	02-23-06
	SL 9	PEDESTRIAN SIGNAL ASSEMBLY	01-01-05
	SL 10	TRAFFIC SIGNAL CONTROLLER BASE DETAILS	02-23-06
	SL 11	TRAFFIC SIGNAL LOOP DETECTOR DETAILS	02-23-06
	SL 12	TRAFFIC COUNTING LOOP DETECTOR DETAILS	04-28-05
	SL 13	VIDEO DETECTION CAMERA MOUNT	02-23-06
	SL 14	HIGHWAY LUMINAIRE POLE GROUND MOUNT	08-25-05
	SL 15	LUMINAIRE SLIP BASE DETAILS	08-25-05
	SL 16	HIGHWAY LUMINAIRE POLE BARRIER MOUNT	01-01-05
	SL 17	HIGHWAY LUMINAIRE POLE FOUNDATION EXTENSION	01-01-05
	SL 18	SINGLE TRANSFORMER SUBSTATION DETAILS	01-01-05
		Signs (SN)	
	SN 1	BRIDGE LOAD LIMITS SIGNS	01-01-05
	SN 2	SCHOOL SPEED LIMIT ASSEMBLY	01-01-05
	SN 3	OVERHEAD SCHOOL SPEED LIMIT ASSEMBLY	01-01-05
	SN 4	FLASHING STOP SIGN	01-01-05
	SN 5	TYPICAL INSTALLATION FOR MILEPOST SIGNS	01-01-05
	SN 6	SPEED REDUCTION SIGN SEQUENCE	01-01-05
	SN 7	PLACEMENT OF GROUND MOUNTED SIGNS	01-01-05
	SN 8	GROUND MOUNTED TIMBER SIGN POST (P1)	04-28-05
	SN 9	GROUND MOUNTED TUBULAR STEEL SIGN POST (P2)	01-01-05
	SN 10	GROUND MOUNTED SQUARE STEEL SIGN POST (P3)	01-01-05
	SN 11	SLIPBASE GROUND MOUNTED TUBULAR STEEL SIGN POST (P4)	04-28-05
	SN 12A	GROUND MOUNTED SIGN INSTALLATION DETAILS	08-25-05
	SN 12B	GROUND MOUNTED SIGN INSTALLATION DETAILS	01-01-05
	SN 12C	GROUND MOUNTED SIGN INSTALLATION DETAILS	01-01-05

	DWG. NO.	DESCRIPTION	DATE
		Striping (ST)	
	ST 1	OBJECT MARKERS "T" INTERSECTION AND PAVEMENT TRANSITION GUIDANCE	01-01-05
	ST 2	FREEWAY CROSSOVER MARKINGS	01-01-05
	ST 3	TYPICAL PAVEMENT MARKINGS	01-01-05
	ST 4	CROSSWALKS, PARKING AND INTERSECTION APPROACHES	01-01-05
	ST 5	PAINTED MEDIAN AND AUXILIARY LANE DETAILS	02-23-06
	ST 6	PASSING/CLIMBING LANES TRAFFIC CONTROL	01-01-05
	ST 7	PAVEMENT MARKINGS AND SIGNS AT RAILROAD CROSSING	01-01-05
	ST 8	PLOWABLE PAVEMENT MARKERS	01-01-05
	ST 9	SCHOOL CROSSING AND SCHOOL MESSAGE	01-01-05
		Structures and Walls (SW)	
	SW 1A	WELDED END GUARD UNIT	01-01-05
	SW 1B	PRECAST CONCRETE CATTLE GUARD	01-01-05
	SW 2	NOISE WALL PLACEMENT AREA	01-01-05
	SW 3A	PRECAST CONCRETE NOISE WALL 1 OF 2	01-01-05
	SW 3B	PRECAST CONCRETE NOISE WALL 2 OF 2	01-01-05
	SW 4A	PRECAST CONCRETE RETAINING/NOISE WALL 1 OF 2	01-01-05
	SW 4B	PRECAST CONCRETE RETAINING/NOISE WALL 2 OF 2	02-23-06
		Traffic Control (TC)	
	TC 1A	CONSTRUCTION ZONE CHANNELIZATION DEVICES	01-01-05
	TC 1B	CONSTRUCTION ZONE SIGNING	01-01-05
	TC 2A	TRAFFIC CONTROL GENERAL	01-01-05
	TC 2B	TRAFFIC CONTROL GENERAL	01-01-05
	TC 3	TRAFFIC CONTROL PROJECT LIMIT SIGNING	01-01-05
	TC 4	TRAFFIC CONTROL URBAN INTERSECTIONS WITH ROADWAYS UNDER 50 MPH	01-01-05
	TC 5	TRAFFIC CONTROL URBAN INTERSECTIONS WITH ROADWAYS UNDER 50 MPH	01-01-05
	TC 6	TRAFFIC CONTROL PEDESTRIAN ROUTING	01-01-05
	TC 7	TRAFFIC CONTROL ROAD CLOSED, DETOUR	01-01-05
	TC 8	TRAFFIC CONTROL LANE CLOSURE	01-01-05
	TC 9	TRAFFIC CONTROL MULTILANE CLOSURE	01-01-05
	TC 10	TRAFFIC CONTROL EXPRESSWAY AND FREEWAY CROSSOVER/ TURN AROUND	01-01-05
	TC 11	TRAFFIC CONTROL EXIT RAMP GORE	01-01-05
	TC 12	TRAFFIC CONTROL ENTRANCE RAMP GORE	01-01-05
	TC 13	TRAFFIC CONTROL SHOULDER-HAUL ROAD	01-01-05
	TC 14	TRAFFIC CONTROL FLAGGING OPERATION	01-01-05
	TC 15	TRAFFIC CONTROL 2 LANE / 2 WAY SEAL COAT WITH COVER MATERIAL	01-01-05
	TC 16	TRAFFIC CONTROL PAVEMENT MARKING	01-01-05

☒ MARKED BOXES INDICATE DRAWINGS APPLICABLE TO THIS PROJECT

REVISIONS

NO.	DATE	APPR.	REMARKS
1	02/24/05	B.A.	CHANGE 1
2	04/28/05	B.A.	CHANGE 2
3	06/30/05	B.A.	CHANGE 3
4	08/25/05	B.A.	CHANGE 4
5	02/23/06	B.A.	CHANGE 6

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — FEB.23,2006 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — FEB.23,2006 DATE
DEPUTY DIRECTOR

STANDARD DRAWING INDEX SHEET

STANDARD DRAWING TITLE

STD DWG
1-C

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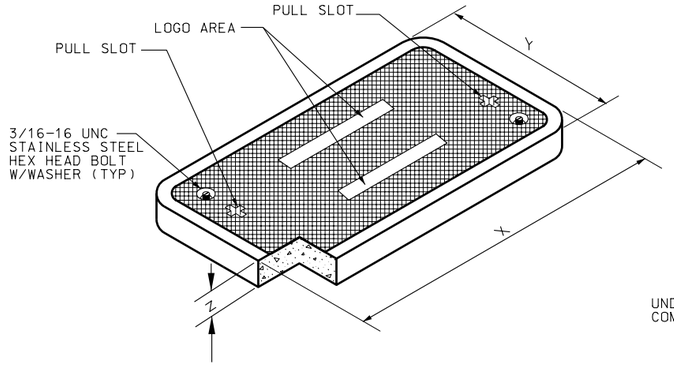
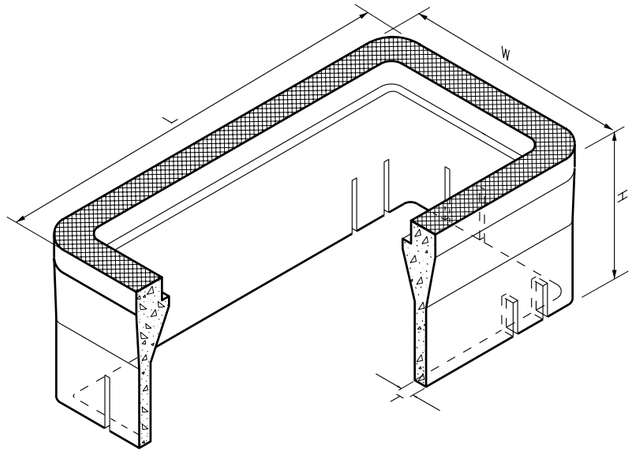
01-MAR-2006



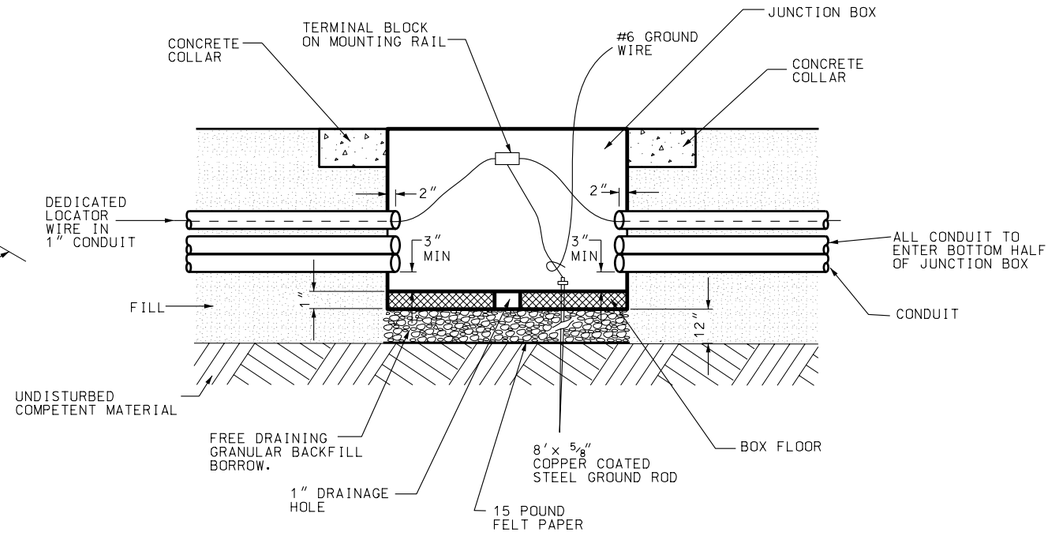


BOX AND LID DIMENSIONS

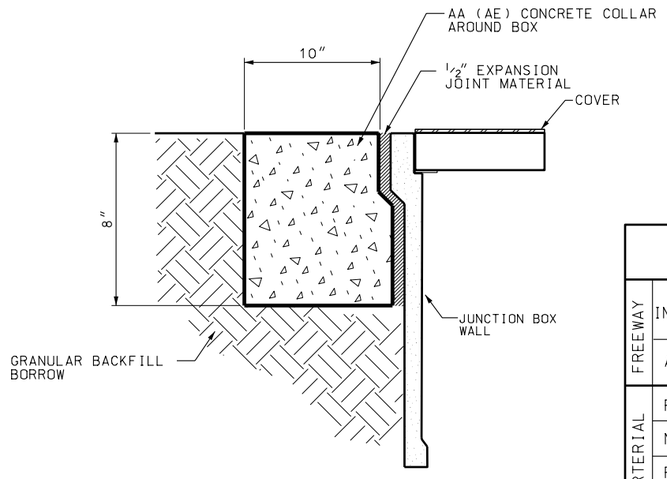
BOX TYPE	"L" inch	"W" inch	"H" inch	"T" inch	"X" inch	"Y" inch	"Z" inch
I-PC	25	16	24	1 1/2	23 1/4	13 3/4	2
II-PC	37 5/8	26	24	1 1/2	35 5/8	24	3
III-PC	49 5/8	32 1/8	24	2	47 5/8	30 1/8	3

NOTES:

1. STAMP BOX LOGO INTO THE LID FROM THE FACTORY. (SEE SECTION 13554).
2. DO NOT PLACE JUNCTION BOXES IN THE TRAVELED-WAY OR ON FREEWAY SHOULDERS.
3. CONCRETE COLLAR WIDTH VARIES WHEN ADJACENT TO ATMS CABINETS. SEE STD. DWG. AT 8.
4. PROVIDE CONCRETE COLLARS IN ALL LOCATIONS EXCEPT WITHIN PAVED AREAS.
5. INSTALL CORRECTLY SIZED CONDUIT PLUG IN EACH CONDUIT ENTERING THE JUNCTION BOX.



JUNCTION BOX CONDUIT PENETRATION DETAIL



JUNCTION BOX CONCRETE COLLAR DETAIL

TABLE 1. FREEWAY AND ARTERIAL STREET APPLICATIONS

	APPLICATION	LOAD RATING 1
FREEWAY	INCIDENTAL TRAFFIC: PAVED GORE, PAVED AREA BEHIND SHOULDER	X
FREEWAY	ALL OTHER AREAS	X
ARTERIAL	PAVED SHOULDER OUT OF TRAFFIC	X
ARTERIAL	NON-RAISED MEDIAN, INDUSTRIAL/COMMERCIAL DRIVEWAYS	X
ARTERIAL	PARKWAY/SIDEWALK, BEHIND SIDEWALK	X
ARTERIAL	ALL OTHER AREAS	X

TABLE 2. JUNCTION BOX LID STATIC VERTICAL LOAD RATING

LOAD RATING	MINIMUM DESIGN LOAD (lb)	MINIMUM TEST LOAD (lb)	TEST AREA (inch)
1	16,000	33,500	10 x 20

REVISIONS

NO.	DATE	APPR.	REMARKS
1	2/24/05	S.S.	REMOVED LOAD 3 RATING BOXES AND REVISED DESIGN & TEST LOAD RATINGS.
2	Ø2/23/06	L.M.	TABLE 1 AND TABLE 2 CHANGED TO ELIMINATE LOAD RATING 2, FREEWAY AND ARTERIAL APPLICATION DETAILS REMOVED.

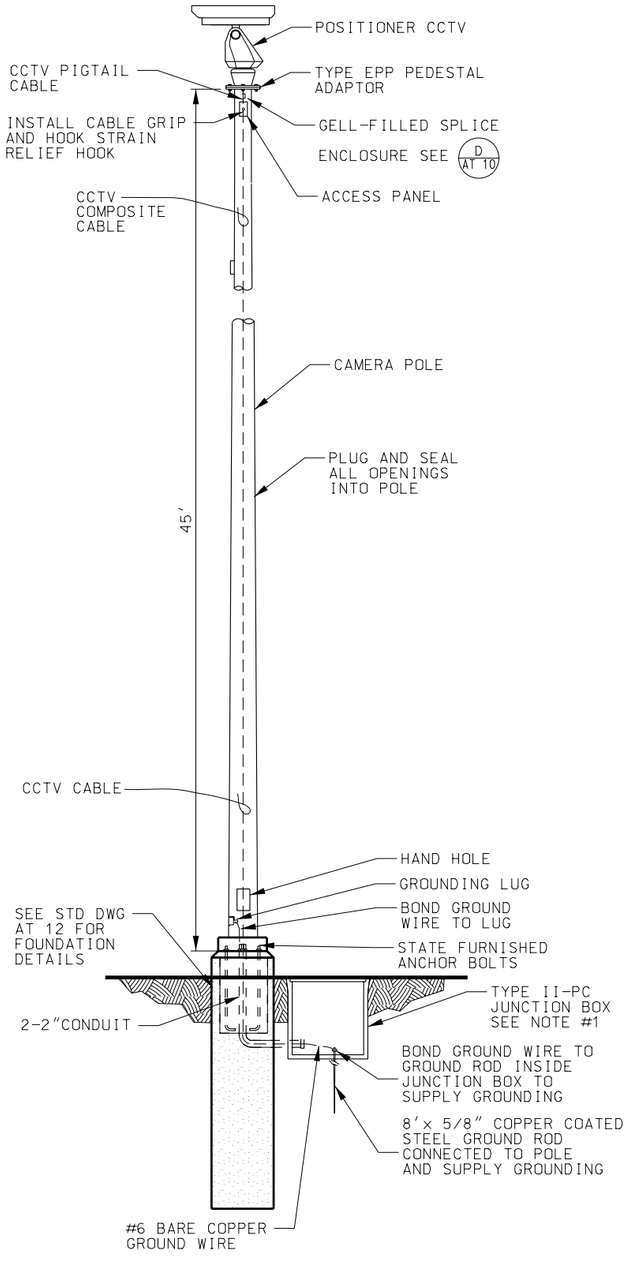
UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — FEB.23,2006 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — FEB.23,2006 DATE
DEPUTY DIRECTOR

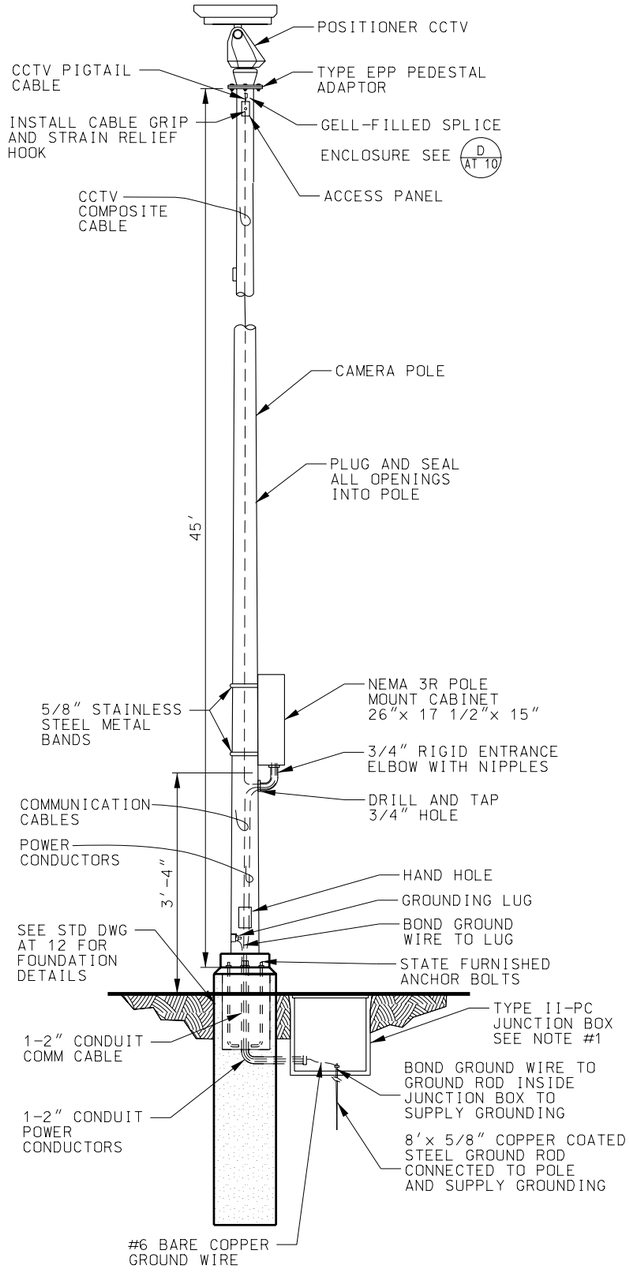
POLYMER-CONCRETE JUNCTION BOX DETAILS

STANDARD DRAWING TITLE

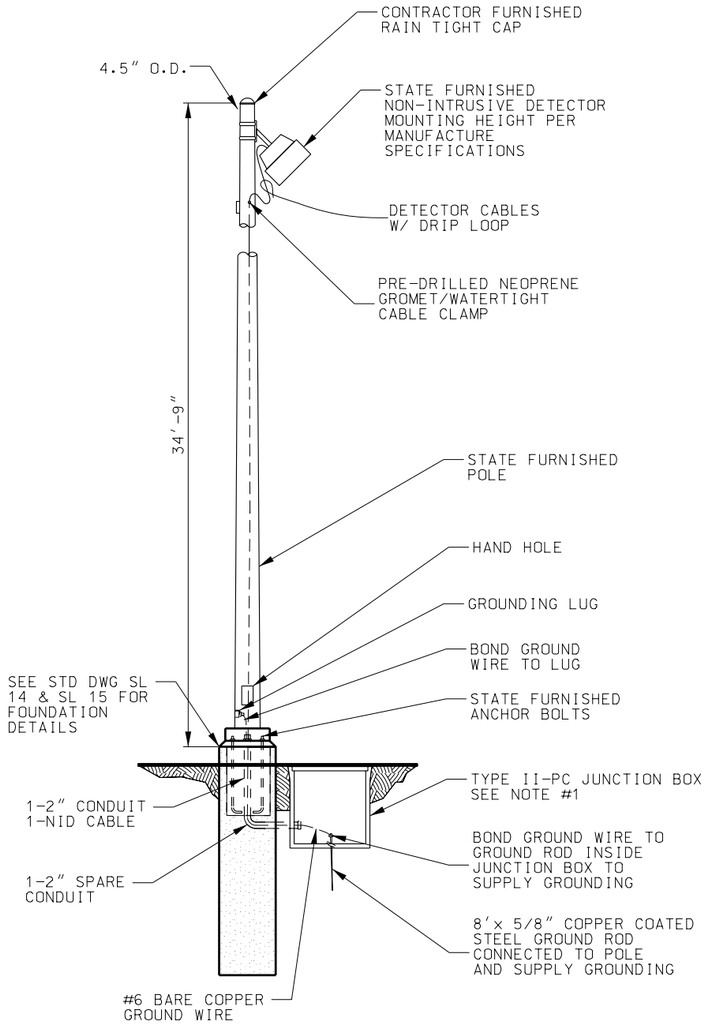
STD DWG
AT 7



A AT 11 FREEWAY CCTV POLE DETAIL



B AT 11 FREEWAY CCTV POLE DETAIL WITH POLE MOUNT CABINET



C AT 11 LUMINAIRE POLE WITH NID

NOTE:
1. JUNCTION BOX REQUIRED UNLESS POLE IS WITHIN 20' OF CONTROL CABINET.
2. REFER TO AT 10 FOR MOUNTING DETAILS.

REVISIONS

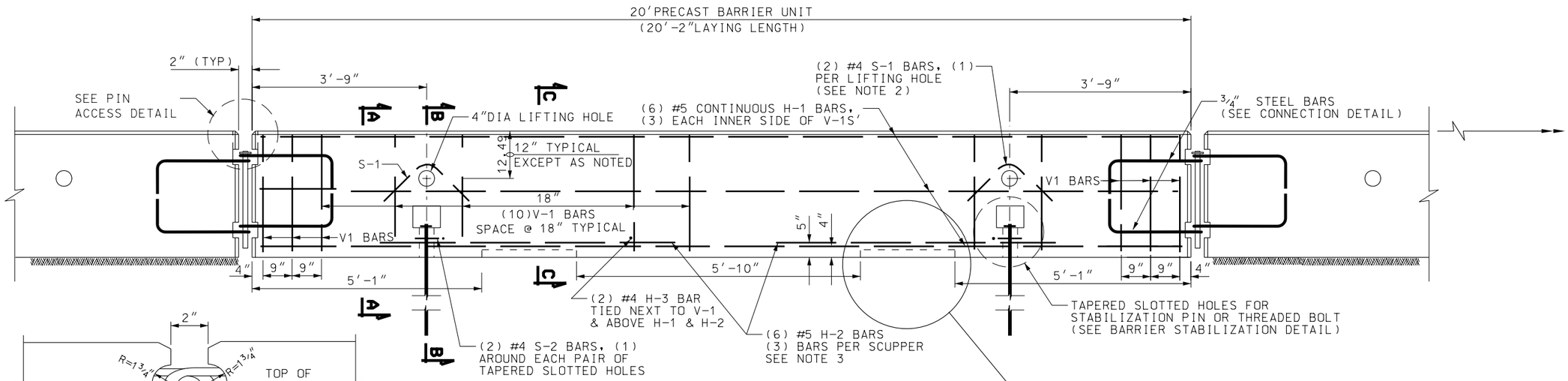
NO.	DATE	APPR.	REMARKS
1	2/24/05	S.S.	ENTIRE DRAWING REVISED.
1	02/23/06	L.M.	UPDATED DRAWING REFERENCE AND ADDED CAP CALLOUT ON DETAIL C.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — FEB.23.2006 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — FEB.23.2006 DATE
DEPUTY DIRECTOR

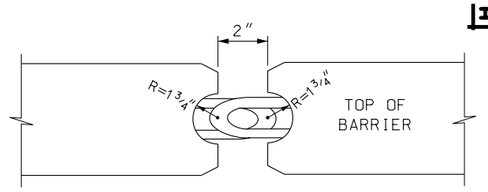
CCTV POLE DETAILS
STANDARD DRAWING TITLE

STD DWG
AT 11

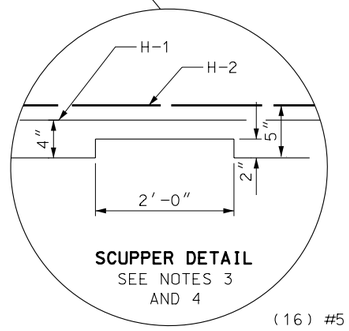


ELEVATION – TYPICAL BARRIER

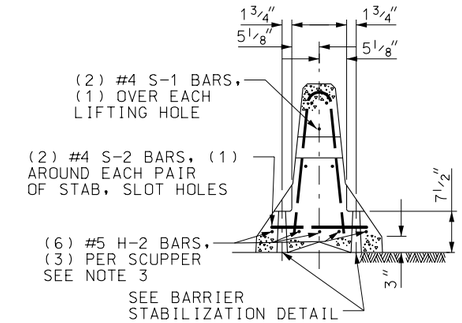
MASS: 3.9 TONS PER PANEL



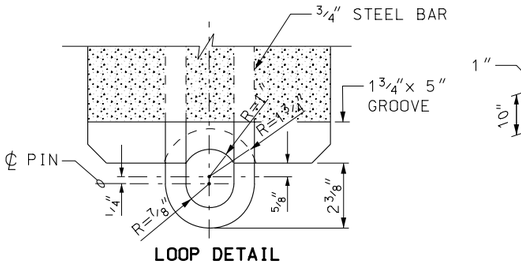
PIN ACCESS DETAIL



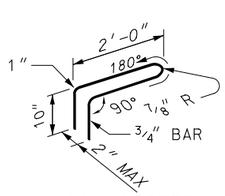
SCUPPER DETAIL
SEE NOTES 3
AND 4



SECTION B-B



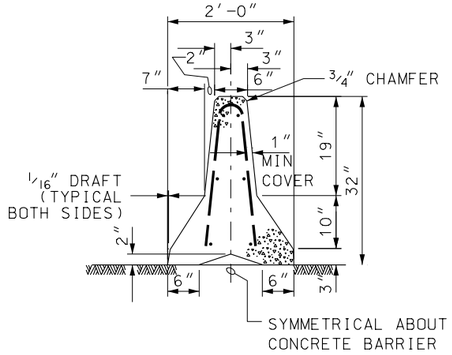
LOOP DETAIL



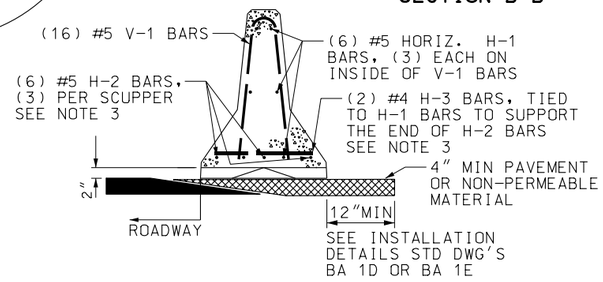
GALVANIZED
STEEL BAR

CONNECTION DETAILS

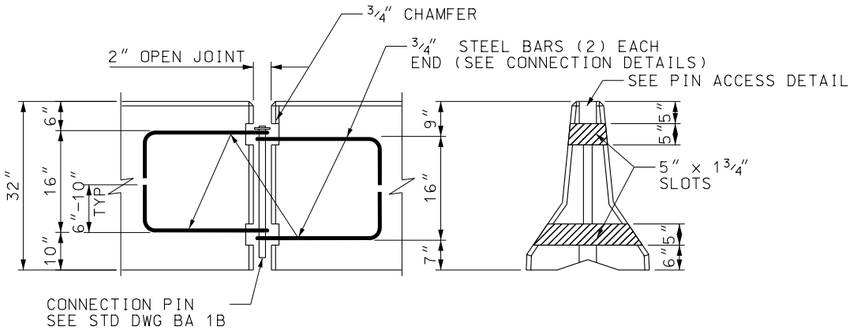
SEE BA 1B FOR PIN DETAILS



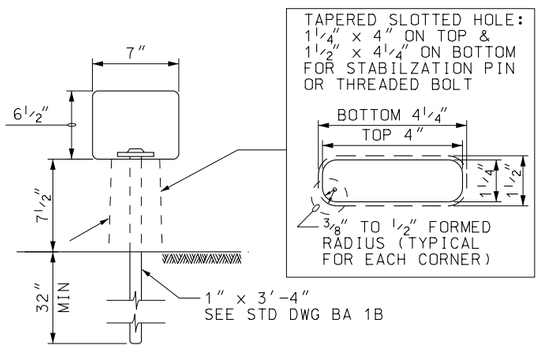
SECTION A-A



SECTION C-C



LOOP LOCATION BARRIER SLOT DETAIL



BARRIER STABILIZATION DETAIL

NOTES:

1. SEE STD DWG BA 1B FOR ADDITIONAL REINFORCEMENT STEEL REQUIREMENTS.
2. USE A 4" WHITE PVC SLEEVE TO FORM THE LIFTING HOLES. LEAVE SLEEVE IN PLACE AFTER CASTING.
3. INDICATE ON PLAN SET WHEN BARRIER SECTIONS WITH SCUPPERS ARE REQUIRED.
4. PROVIDE BLOCK OUT AND REINFORCING STEEL FOR SCUPPERS WHEN NOTED ON PLANS.
5. PLACE AN ADEQUATE AMOUNT OF SILICONE ADHESIVE ON BOTTOM OF WASHER BEFORE INSERTING PIN TO HOLD IN PLACE AND PREVENT EASY HAND REMOVAL.

REVISIONS				
NO.	DATE	APPR.	REMARKS	
1	02/23/06	B.A.	CORRECTED NOTE 1 DRAWING CALLOUT.	

UTAH DEPARTMENT OF TRANSPORTATION

STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — FEB.23.2006 DATE

CHAIRMAN STANDARDS COMMITTEE APPROVED — FEB.23.2006 DATE

DEPUTY DIRECTOR

PRECAST CONCRETE FULL BARRIER STANDARD SECTION

STANDARD DRAWING TITLE

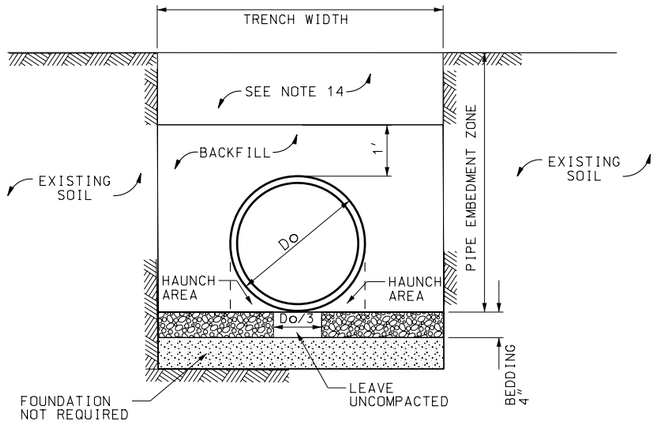
STD DWG

BA 1A

DGN File: L:\Standard_Drawings\Imperial\2005\Approved\xChanges6Approved\ba01A.dgn

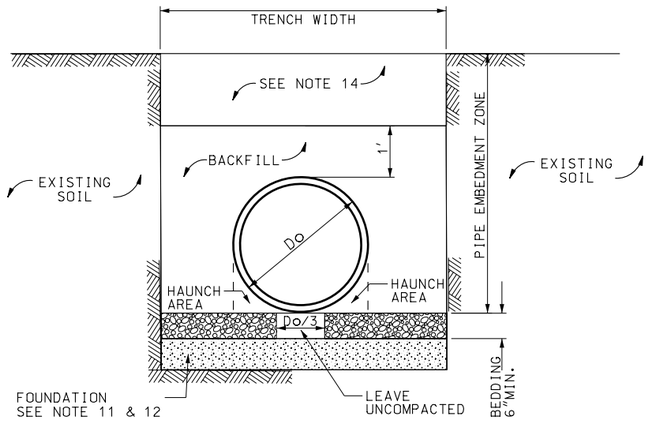
02-MAR-2006

BACKFILL/BEDDING REQUIREMENTS FOR PLASTIC PIPE



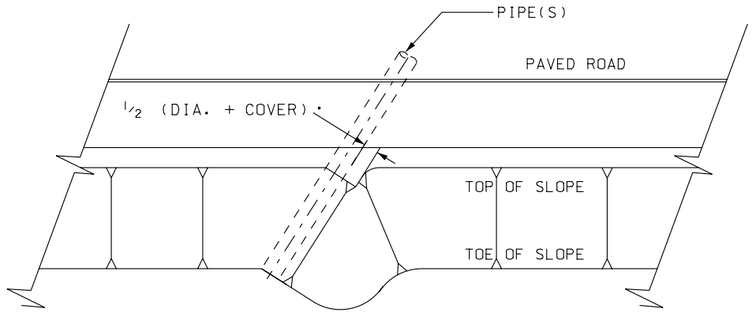
DETAIL "A"

STABLE FOUNDATION SOILS



DETAIL "B"

UNSTABLE OR UNYIELDING FOUNDATION SOILS



END TREATMENT OF SKEW CULVERTS

NOTES:

1. PRECOMPACTION AND COMPACTION PER AASHTO T 99 WITH DENSITY NOT LESS THAN 90% OF LABORATORY DENSITY. PLACE UNFORM LAYERS ON BOTH SIDES OF THE PIPE. FOLLOW STANDARD SPECIFICATION SECTION 02324.
2. USE ONLY TRENCH INSTALLATION FOR HDPE AND PVC PIPE.
3. USE STD DWG DG 3 IN CONJUNCTION WITH THIS DRAWING.
4. RECESS THE BEDDING TO RECEIVE CULVERT JOINTS WHERE APPLICABLE.
5. SEAL CONNECTIONS TO JUNCTIONS BOXES, MANHOLES, AND INLETS ACCORDING TO SPECIFICATIONS.
6. PROTECT PIPE INSTALLATION DURING CONSTRUCTION. DO NOT EXCEED DESIGN STRENGTH.
7. USE COMPACTION EQUIPMENT SMALLER THAN THE TRENCH WIDTH BETWEEN THE PIPE AND THE TRENCH WALL. FULLY COMPACT THE HAUNCH AREAS. HAND TAMP AREAS WHERE COMPACTION EQUIPMENT CAN NOT COMPACT.
8. EXCAVATE A TRENCH OF EQUAL OR GREATER WIDTH THAN SHOWN IN TABLE 1. INCREASE THE TRENCH WIDTH TO 2 FEET MINIMUM ON EACH SIDE OF THE PIPE WHEN EXISTING SOIL DOES NOT MEET THE REQUIREMENTS OF NOTE 9.
9. USE WELL GRADED BEDDING AND STRUCTURAL BACKFILL FREE OF ORGANIC MATERIAL AND FROZEN LUMPS, MEETING AASHTO M 145, A-1, A-2-4, A-2-5, OR A-3. EXCLUDE ANY PARTICLES 1.5 INCHES LONG OR 50% OF THE WIDTH OF THE EXTERNAL PIPE CORRUGATIONS IN THE GREATEST DIMENSION.
10. DO NOT DISTURB INSTALLED PIPE OR EMBEDMENT OR LEAVE VOIDS WHEN USING TRENCH BOXES AND SHIELDS.
11. REMOVE AS DIRECTED BY THE ENGINEER ALL FOUNDATIONS THAT HAVE UNSTABLE SOILS SUCH AS PEAT, BOG, SILTS, CLAYS, AND UNCEMENTED SANDS WHOSE WATER CONTENT EXCEED THEIR LIQUID LIMITS. REPLACE WITH SUITABLE BACKFILL MATERIAL.
12. EXCAVATE ROCK OR UNYIELDING MATERIAL FROM THE BOTTOM OF THE TRENCH AND PROVIDE 6 INCHES MINIMUM BEDDING OF BACKFILL MATERIAL.
13. FOLLOW STANDARD SPECIFICATION SECTION 00820 AND "THE UDOT CONSTRUCTION SAFETY AND HEALTH MANUAL" FOR MINIMUM TRENCH SAFETY REQUIREMENTS.
14. SELECT, PLACE, AND COMPACT BACKFILL MATERIAL IN THE ZONE EXTENDING MORE THAN 1 FOOT ABOVE THE PIPE FINAL GRADE, ACCORDING TO PLANS AND SPECIFICATIONS.

TABLE 1: MINIMUM TRENCH WIDTH

PIPE NOMINAL SIZE (INCHES)	MINIMUM WIDTH (FEET)
18	3.7
24	4.6
30	5.5
36	6.4
42	7.3
48	8.2
54	9.1
60	10.0

REVISIONS

NO.	DATE	APPR.	REMARKS
1	02/23/06	M.F.	NEW DRAWING. REPLACED DG 5.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

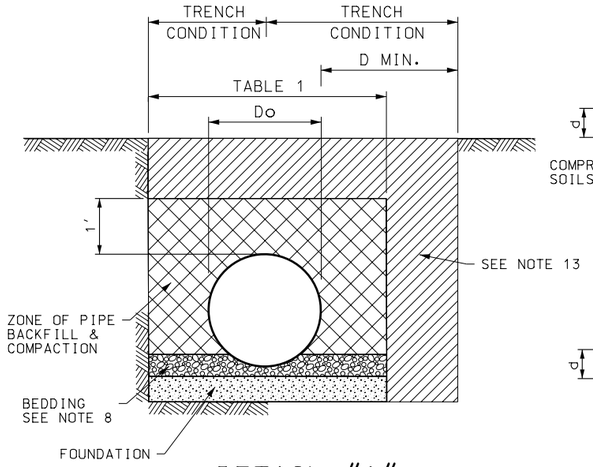
RECOMMENDED FOR APPROVAL — FEB.23.2006 DATE — CHAIRMAN STANDARDS COMMITTEE
APPROVED — FEB.23.2006 DATE — DEPUTY DIRECTOR

PLASTIC PIPE CULVERT INSTALLATION

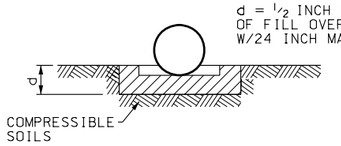
STANDARD DRAWING TITLE

STD DWG
DG 5A

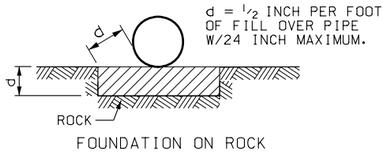
DGN File: L:\Standard_Drawings\Imperial\2005Approved\Changes6Approved\dg05A.dgn
02-MAR-2006



DETAIL "A"
GENERAL INFORMATION



FOUNDATION ON LOCALIZED SOFT ZONE



FOUNDATION ON ROCK

DETAIL "B"
FOUNDATION

TABLE 1: MINIMUM TRENCH WIDTH

PIPE NOMINAL SIZE/SPAN (INCHES)	MINIMUM WIDTH* (FEET)
18	3.7
24	4.6
30	5.5
36	6.4
42	7.3
48	8.2
54	9.1
60	10.0

* EMBANKMENT CONDITION USE D MIN. SEE DETAIL "A"

NOTES:

1. PRECOMPACTION AND COMPACTION PER AASHTO T 99 WITH DENSITY NOT LESS THAN 90% OF LABORATORY DENSITY. PLACE UNIFORM LAYERS ON BOTH SIDES OF THE PIPE. FOLLOW STANDARD SPECIFICATION SECTION 02324.
2. USE STD DWG DG 1, 2, AND 4.
3. RECESS THE BEDDING TO RECEIVE CULVERT JOINTS WHERE APPLICABLE.
4. SEAL CONNECTIONS TO JUNCTIONS BOXES, MANHOLES, AND INLETS ACCORDING TO SPECIFICATIONS.
5. PROTECT PIPE INSTALLATION DURING CONSTRUCTION. DO NOT EXCEED DESIGN STRENGTH.
6. USE COMPACTION EQUIPMENT SMALLER THAN THE TRENCH WIDTH BETWEEN THE PIPE AND TRENCH WALL. FULLY COMPACT THE HAUNCH AREAS. HAND TAMP AREAS WHERE COMPACTION EQUIPMENT CAN NOT COMPACT.
7. EXCAVATE A TRENCH OF EQUAL OR GREATER WIDTH THAN SHOWN ON TABLE 1. INCREASE THE TRENCH WIDTH TO 2 FEET MINIMUM ON EACH SIDE OF THE PIPE WHEN EXISTING SOIL DOES NOT MEET THE REQUIREMENTS OF NOTE 8.
8. USE WELL GRADED BEDDING AND STRUCTURAL BACKFILL FREE OF ORGANIC MATERIAL AND FROZEN LUMPS, MEETING AASHTO M 145, A-1, A-2-4, A-2-5, OR A-3. EXCLUDE ANY PARTICLES 1.5 INCHES LONG OR 50% OF THE WIDTH OF THE EXTERNAL PIPE CORRUGATIONS IN THE GREATEST DIMENSION.
9. DO NOT DISTURB INSTALLED PIPE OR EMBEDMENT OR LEAVE VOIDS WHEN USING TRENCH BOXES AND SHIELDS.
10. REMOVE AS DIRECTED BY THE ENGINEER ALL FOUNDATIONS THAT HAVE UNSTABLE SOILS SUCH AS PEAT, BOG, SILTS, CLAYS, AND UNCEMENTED SANDS WHOSE WATER CONTENT EXCEED THEIR LIQUID LIMITS. REPLACE WITH SUITABLE BACKFILL MATERIAL.
11. EXCAVATE ROCK OR UNYIELDING MATERIAL FROM THE BOTTOM OF THE TRENCH AND PROVIDE 6 INCHES MINIMUM OF BEDDING MATERIAL.
12. FOLLOW STANDARD SPECIFICATION SECTION 00820 AND "THE UDOT CONSTRUCTION SAFETY AND HEALTH MANUAL" FOR MINIMUM SAFETY TRENCH REQUIREMENTS.
13. SELECT, PLACE, AND COMPACT MATERIAL IN THE ZONE EXTENDING MORE THAN 1 FOOT ABOVE THE PIPE FINAL GRADE, ACCORDING TO PLANS AND SPECIFICATIONS.
14. PLACE BEDDING UP TO WIDEST POINT OF PIPE ARCH.

DETAIL "C"
STABLE FOUNDATION SOILS

DETAIL "D"
STABLE FOUNDATION SOILS

DETAIL "E"
UNSTABLE OR UNYIELDING FOUNDATION SOILS

DETAIL "F"
UNSTABLE OR UNYIELDING FOUNDATION SOILS

END TREATMENT OF SKEW CULVERTS

NO.	DATE	APPR.	REMARKS
1	02/23/06	M.F.	NEW DRAWING.

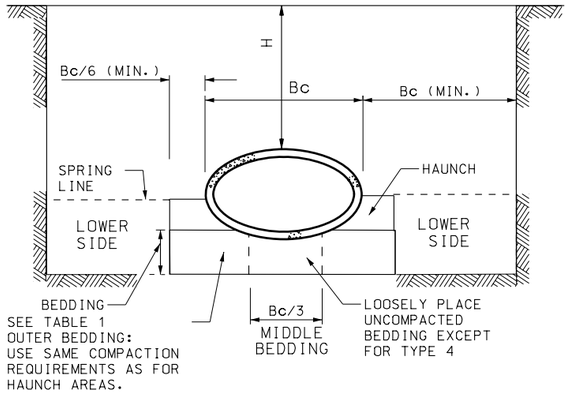
UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — FEB.23.2006 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — FRB.23.2006 DATE
DEPUTY DIRECTOR

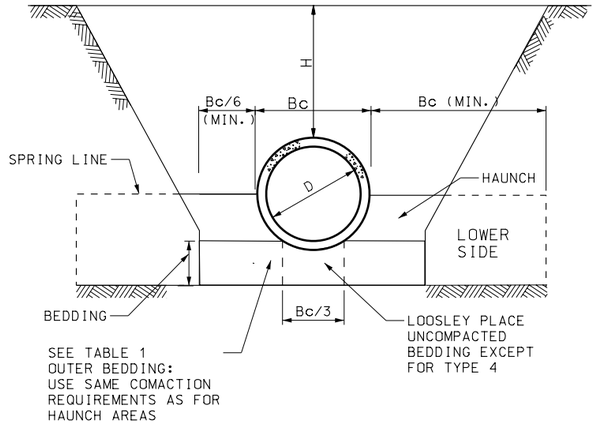
METAL PIPE OR PIPE ARCH CULVERT INSTALLATION

STANDARD DRAWING TITLE

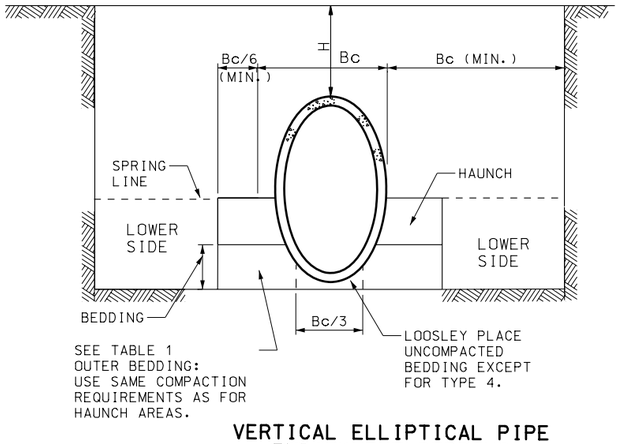
STD DWG
DG 5B



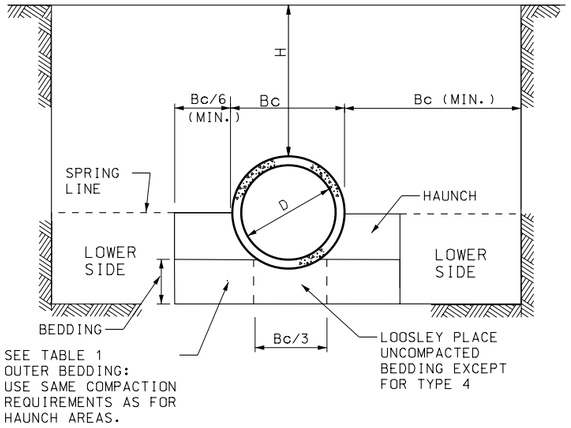
HORIZONTAL ELLIPTICAL PIPE
EMBANKMENT BEDDING
(USE ONLY TYPE 2 & 3 INSTALLATION)



STANDARD TRENCH INSTALLATION
ROUND PIPE



VERTICAL ELLIPTICAL PIPE
EMBANKMENT BEDDING
(USE ONLY TYPE 2 & 3 INSTALLATION)



STANDARD EMBANKMENT INSTALLATION
ROUND PIPE

TABLE 1. SOILS AND MINIMUM COMPACTION REQUIREMENTS FOR STANDARD EMBANKMENT AND TRENCH INSTALLATIONS.

INSTALLATION TYPE	BEDDING THICKNESS	HAUNCH & OUTER BEDDING			LOWER SIDE		
		MINIMUM COMPACTION	AASHTO SOIL CLASS	USCS	MINIMUM COMPACTION	AASHTO SOIL CLASS	USCS
TYPE 1	SOIL FOUNDATIONS: Bc/24 IN. MIN., NOT LESS THAN 3 IN. ROCK FOUNDATIONS: Bc/12 IN. MIN., NOT LESS THAN 6 IN.	95%	A1,A3	SW	90% 95% 100%	A1,A3 A2,A4 A5,A6	SW ML CL

NOTES:

1. COMPACT BACKFILL ACCORDING TO TABLE 1. REFER TO AASHTO T 99. REMOVE BOULDERS OR ROCKS WITHIN BEDDING AREAS. PROVIDE SUFFICIENT TRENCH WIDTH TO FIT COMPACTION EQUIPMENT.
2. RECESS THE BEDDING TO RECEIVE CULVERT JOINTS WHERE APPLICABLE.
3. FILL AND COMPACT HAUNCH AREAS UNDER PIPE ACCORDING TO SPECIFICATIONS. REMOVE ANY VOIDS WITHOUT DISTURBING THE PIPE FROM SPECIFIED LINE AND GRADE.
4. SEAL CONNECTIONS TO JUNCTIONS BOXES, MANHOLES, AND INLETS ACCORDING TO MANUFACTURES' RECOMMENDATIONS.
5. PROTECT PIPES DURING CONSTRUCTION. REPLACE ANY PIPES DAMAGED DURING CONSTRUCTION.
6. DO NOT USE DAMAGED PIPES THAT HAVE CRACKS WIDER THAN 0.01 INCHES.
7. REMOVE AS DIRECTED BY THE ENGINEER UNSTABLE SOILS SUCH AS PEAT, BOG, SILTS, CLAYS, AND UNCEMENTED SANDS WHOSE WATER CONTENT EXCEED THEIR LIQUID LIMITS FROM THE PIPE BEDDING AREA. REPLACE WITH SUITABLE BACKFILL MATERIAL.
8. FOLLOW STANDARD SPECIFICATION SECTION 00820 AND "THE UDOT CONSTRUCTION SAFETY AND HEALTH MANUAL" FOR MINIMUM SAFETY TRENCH REQUIREMENTS.

REINFORCED CIRCULAR PIPE MAX.FILL HEIGHT

PIPE DIA. inch	PIPE CLASSES II ft.	III ft.	IV ft.	V ft.
18	20	27	41	61
21	20	27	41	61
24	20	27	40	61
27	20	27	40	61
30	20	27	40	60
33	19	27	39	60
36	19	26	39	59
42	19	26	39	59
48	19	26	39	59
54	18	25	39	58
60	18	25	38	58
66	18	25	38	57
72	18	24	38	57
78	17	24	37	57
84	17	24	37	56
90	17	24	37	56
96	17	24	36	56
102	17	23	36	55
108	16	23	36	55
114	16	23	35	55
120	16	23	35	54
126	16	23	35	54
132	16	22	35	54
138	15	22	34	53
144	15	22	34	53

ELLIPTICAL PIPE MAX.FILL HEIGHT

PIPE DIA. inch	PIPE CLASSES II ft.	III ft.	IV ft.	V ft.
14x23	20	27	41	61
19x30	20	27	41	61
22x34	20	27	40	61
24x38	20	27	40	61
27x42	20	27	40	60
29x45	19	27	39	60
32x49	19	26	39	59
34x53	19	26	39	59
38x60	19	26	39	59
43x68	18	25	39	58
48x76	18	25	38	58
53x83	18	25	38	57
58x91	18	24	38	57
63x98	17	24	37	57
68x106	17	24	37	56
72x113	17	24	37	56
77x121	17	24	36	56
82x128	17	23	36	55
87x136	16	23	36	55
92x143	16	23	35	55
97x151	16	23	35	54
106x166	16	23	35	54
116x180	16	22	35	54

NON-REINFORCED CIRCULAR PIPE MAX.FILL HEIGHT

PIPE DIA. inch	PIPE CLASSES I ft.	II ft.	III ft.
18	19	27	30
21	18	25	30
24	17	24	29
27	16	23	27
30	15	22	25
33	14	21	23
36	14	19	21

REVISIONS

NO.	DATE	APPR.	REMARKS
1	02/23/06	M.F.	NEW DRAWING. REPLACED DG 6.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

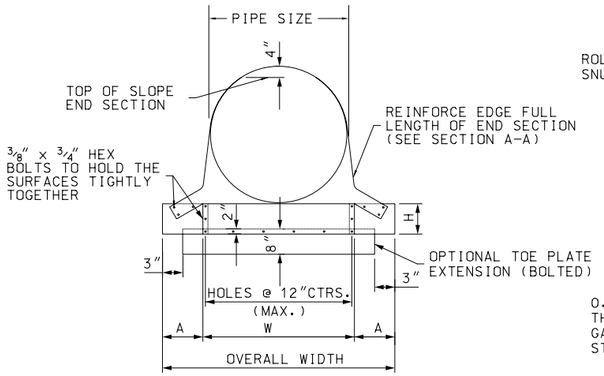
RECOMMENDED FOR APPROVAL — FEB.23,2006 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — FEB.23,2006 DATE
DEPUTY DIRECTOR

PRECAST CONCRETE PIPE CULVERT INSTALLATION

STANDARD DRAWING TITLE

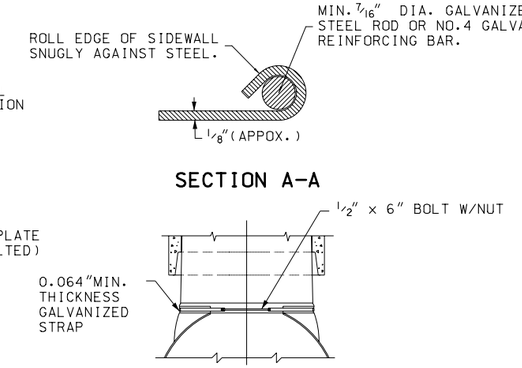
STD DWG
DG 5C

DGN File:L:\Standard Drawings\Imperial\2005approved\Change5approved\dg05c.dgn
02-MAR-2006



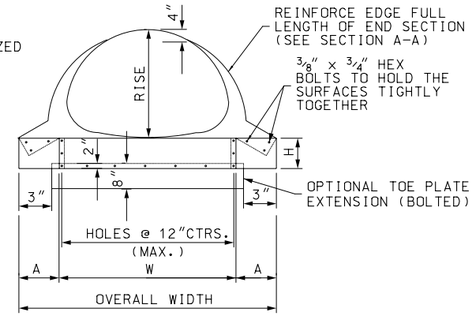
FRONT VIEW

SLOPED END SECTION- TYPE C WITH SAFETY BARS



TYPE #1 CONNECTOR DETAIL

THROUGH 24" DIA.

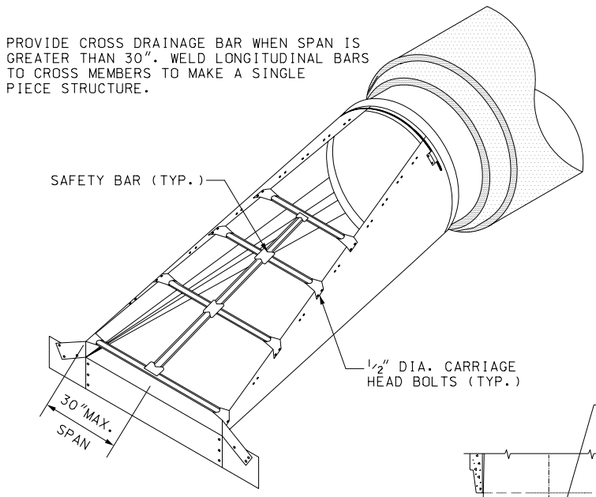


FRONT VIEW

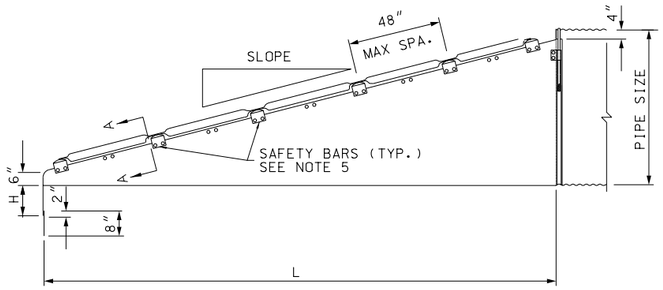
SLOPED END SECTION- TYPE C PIPE ARCH WITH SAFETY BARS

NOTES:

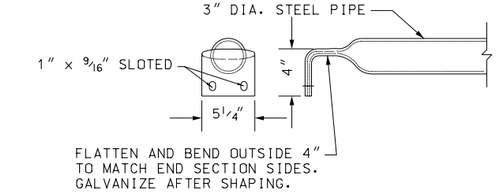
1. SAFETY SLOPE END SECTIONS ARE OPTIONAL FOR USE IN THE AASHTO CLEAR ZONE.
2. STEEL: MEET AASHTO M 218.
3. CONNECTORS: ROUND SIZES THRU 24" ATTACH TO PIPE WITH TYPE #1 STRAPS. ATTACH ALL OTHER SIZES WITH TYPE #2 RODS AND LUGS.
4. TOE PLATE EXTENSIONS: WHEN SPECIFIED IN BID ITEM, USE TOE PLATE EXTENSIONS OF THE SAME GAGE AS END SECTION.
5. SAFETY BARS: USE SCHEDULE 40 ASTM A 500 CLASS B STEEL PIPE FOR SAFETY BARS. GALVANIZE AFTER FABRICATION.
6. PROVIDE SLOTTED HOLES FOR SAFETY BAR ATTACHMENT FOR ALL END SECTIONS.
7. NUMBER OF BARS REQUIRED VARIES DEPENDING ON THE LENGTH OF THE END SECTION. PLACE BAR NO. 1 AT SKIRT END AS SHOWN.
8. BOLTS: USE ONLY STAINLESS STEEL BOLTS AND NUTS.



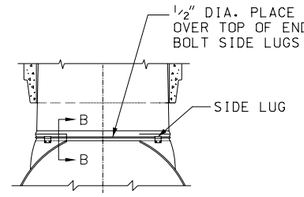
CROSS DRAINAGE STRUCTURE



SIDE ELEVATION FOR CROSS DRAINAGE STRUCTURE (TYP.)

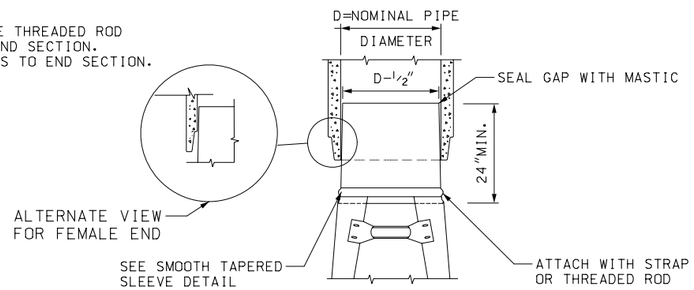


SAFETY BAR DETAIL

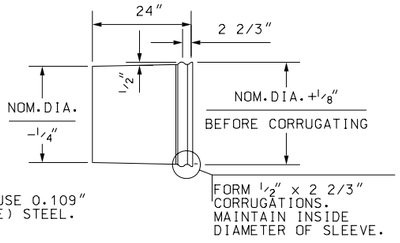


TYPE #2 CONNECTOR DETAILS

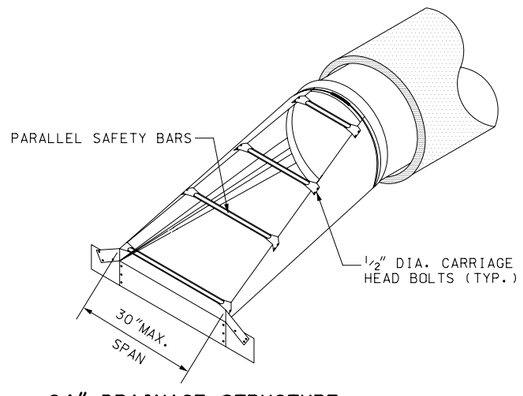
FOR 30" AND LARGER



SMOOTH PIPE CONNECTION DETAIL



SMOOTH TAPERED SLEEVE DETAIL



24" DRAINAGE STRUCTURE

METAL END SECTIONS FOR CIRCULAR PIPE											METAL END SECTIONS FOR ARCHED PIPE										
PIPE DIA. (INCH)	MIN. THICK		DIMENSION (INCHES)				L DIMENSIONS				EQUV DIA. (INCH)	(INCHES)		MIN. THICK		DIMENSION (INCHES)			L DIMENSIONS			
	INCH	GAGE	A	H	W	OVERALL WIDTH	SLOPE	LENGTH (INCH)	SLOPE	LENGTH (INCH)		SPAN	RISE	INCH	GAGE	A	H	W	OVERALL WIDTH	SLOPE	LENGTH (INCH)	SLOPE	LENGTH (INCH)
18	.064	16	8	6	24	40	4:1	32	6:1	48	18	21	15	.064	16	8	6	27	43	4:1	20	6:1	30
21	.064	16	8	6	27	43	4:1	44	6:1	66	21	24	18	.064	16	8	6	30	46	4:1	32	6:1	48
24	.064	16	8	6	30	46	4:1	56	6:1	84	24	28	20	.064	16	8	6	34	50	4:1	40	6:1	60
30	.109	12	12	9	36	60	4:1	80	6:1	120	30	35	24	.079	14	12	9	41	65	4:1	56	6:1	84
36	.109	12	12	9	42	66	4:1	104	6:1	156	36	42	29	.109	12	12	9	48	72	4:1	76	6:1	114
42	.109	12	16	12	48	80	4:1	128	6:1	192	42	49	33	.109	12	16	12	55	87	4:1	92	6:1	138
48	.109	12	16	12	54	86	4:1	152	6:1	228	48	57	38	.109	12	16	12	63	95	4:1	112	6:1	158
54	.109	12	16	12	60	92	4:1	176	6:1	264	54	64	43	.109	12	16	12	70	102	4:1	132	6:1	198
60	.109	12	16	12	66	98	4:1	200	6:1	300	60	71	47	.109	12	16	12	77	109	4:1	148	6:1	222
											72	83	57	.109	12	16	12	89	121	4:1	188	6:1	282

NO.	DATE	APPR.	REMARKS
1	02/23/06	M.F.	NEW DRAWING, ORIGINAL DG 6 REPLACED BY DG 5C.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — DEPUTY DIRECTOR — FEB.23,2006 DATE
CHAIRMAN STANDARDS COMMITTEE APPROVED — FEB.23,2006 DATE

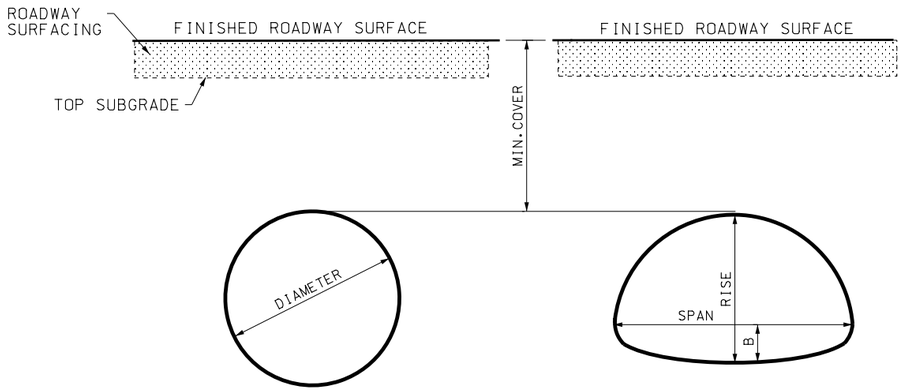
SAFETY SLOPE END SECTION FOR CIRCULAR AND ARCHED PIPES

STANDARD DRAWING TITLE

STD DWG
DG 6

METAL & PLASTIC CULVERTS

METAL PIPE ARCHES

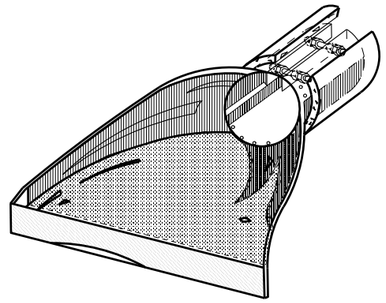


MINIMUM COVER

A. MEASURE MINIMUM COVER FROM THE TOP OF PIPE CULVERT TO THE ROADWAY SURFACE.

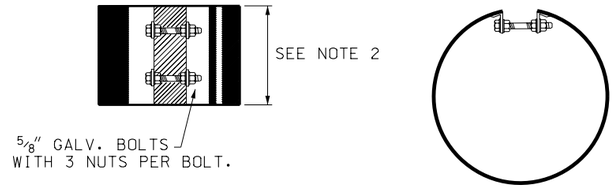
B. MEASURE MAXIMUM FILL HEIGHT FROM THE TOP OF THE PIPE THE PIPE TO THE TOP OF THE PAVEMENT FOR BOTH FLEXIBLE AND RIGID PAVEMENTS.

C. MINIMUM COVER OVER THE CROWN OF THE PIPE IS ADEQUATE ONLY FOR FINISHED CONSTRUCTION. PROVIDE ADEQUATE COVER TO PROTECT PIPE AND PIPE ARCH FROM DAMAGE DURING CONSTRUCTION..



METAL INSERT

FOR CONNECTING CONCRETE PIPE OR CORRUGATED POLYETHYLENE PIPE TO METAL END SECTION.

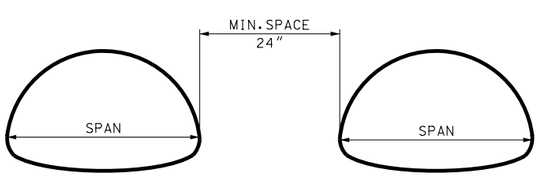


NOTES: METAL INSERTS

1. FABRICATED END SECTION FROM NON FLAMMABLE MATERIALS.
2. CONNECT METAL END SECTIONS TO CONCRETE PIPES OR PLASTIC PIPES USING METAL INSERTS.
3. FOR PIPE DIAMETERS UP TO AND INCLUDING 60" USE A MINIMUM OF 2 BOLTS WITH A LENGTH OF 12" MINIMUM.
4. FOR PIPE DIAMETERS GREATER THAN 60" USE A MINIMUM OF 3 BOLTS WITH A LENGTH OF 18" MINIMUM.
5. GALVANIZED METAL INSERT AND ALL BOLTS, WASHERS AND RIVETS OR WELDS.
6. USE THE SAME WALL THICKNESS FOR METAL INSERT AND METAL END SECTION.
7. CLEAN AND COAT ALL WELDS WITH APPROVED ZINC RICH COMPOUND AS RECOMMENDED BY THE SHEET MANUFACTURE.

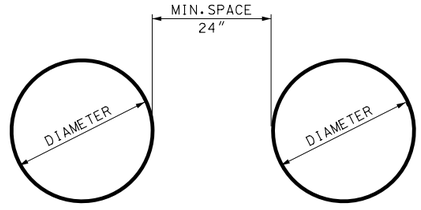
MULTIPLE INSTALLATIONS

PIPE ARCHES



SPAN (inch)	MINIMUM SPACE (inch)
UP TO 36	24
72 TO 86	1/3 SPAN

PIPE CULVERTS



DIAMETER (inch)	MINIMUM SPACE (inch)
UP TO 24	24
48 TO 96	1/2 DIAMETER
96 TO 120	48

NO.	DATE	APPR.	REMARKS
1	02/23/06	M.F.	CLARIFIED MINIMUM COVER DIMENSIONS.

REVISIONS

UTAH DEPARTMENT OF TRANSPORTATION

STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

SALT LAKE CITY, UTAH

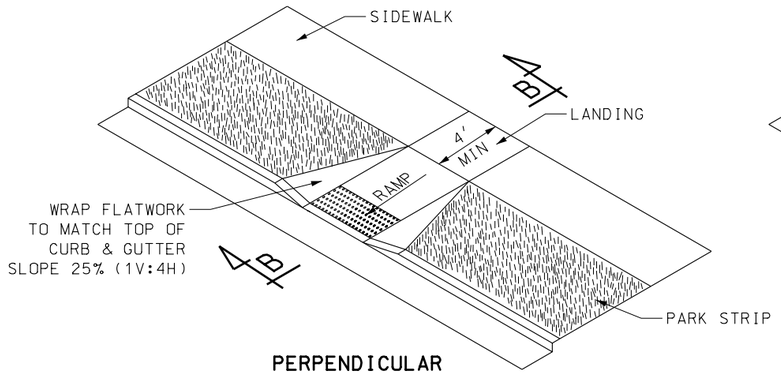
RECOMMENDED FOR APPROVAL — DEPUTY DIRECTOR — FEB.23.2006 DATE

CHAIRMAN STANDARDS COMMITTEE APPROVED — FEB.23.2006 DATE

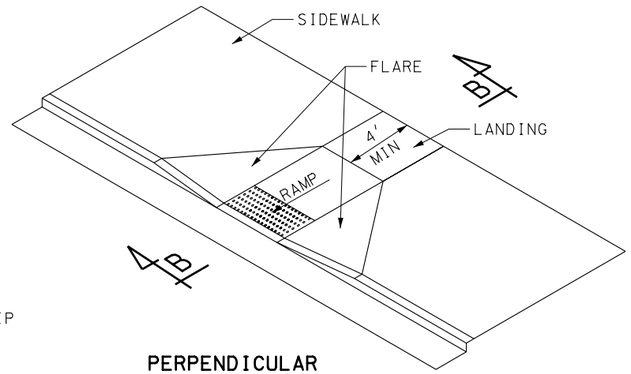
MISCELLANEOUS PIPE DETAILS

STANDARD DRAWING TITLE

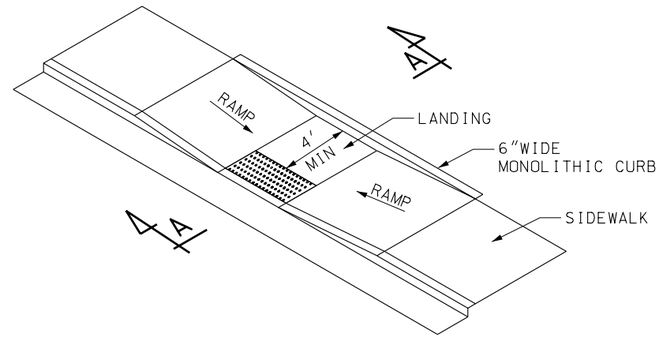
STD DWG
DG 9



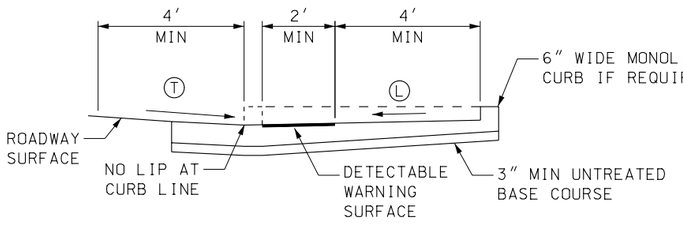
PERPENDICULAR PEDESTRIAN RAMP



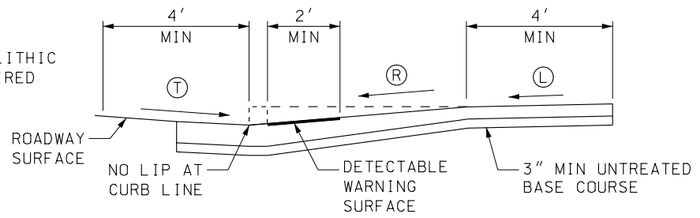
PERPENDICULAR PEDESTRIAN RAMP



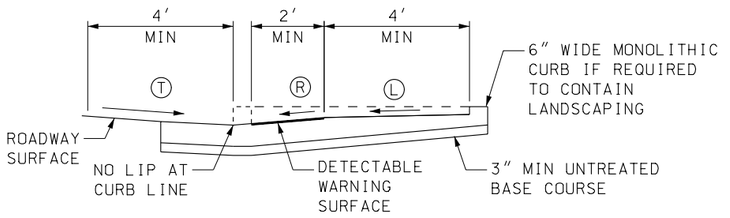
PARALLEL PEDESTRIAN RAMP



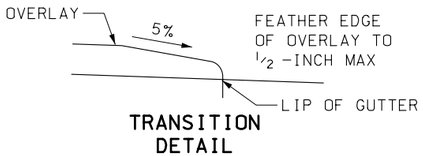
SECTION A–A



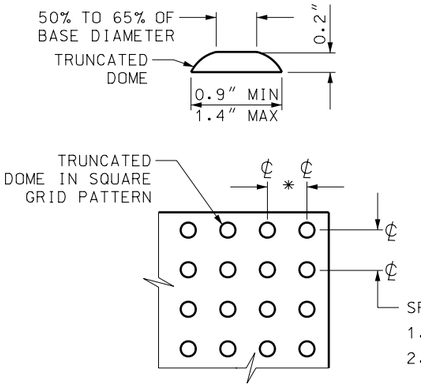
SECTION B–B



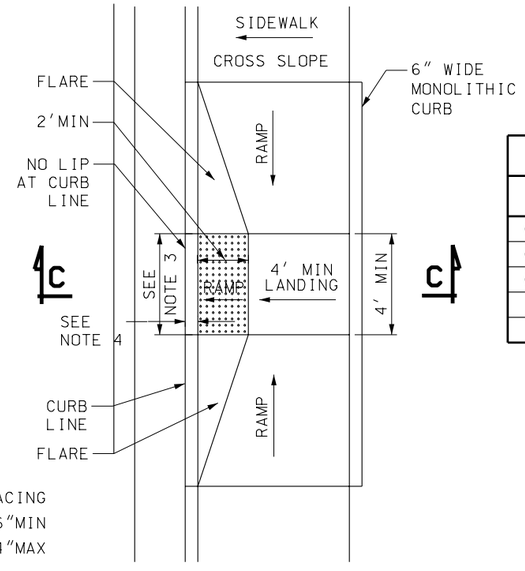
SECTION C–C



TRANSITION DETAIL



DETECTABLE WARNING SURFACE DETAIL A



PEDESTRIAN ACCESS RAMP DETAIL

SLOPE TABLE			
	ITEM	MAX. RUNNING SLOPE *	MAX. CROSS SLOPE *
(L)	LANDING	2% (1V:48H)(b)	2% (1V:48H) (b)
(R)	RAMP	8.33% (1V:12H)(c)	2% (1V:48H) (d)
(T)	TRANSITION	5% (1V:20H)(a)	2% (1V:48H) (d)
	SIDEWALK	--	2% (1V:48H)
	FLARE	10% (1V:10H)	--

* RUNNING SLOPE IS IN THE DIRECTION OF PEDESTRIAN TRAVEL, WHILE CROSS SLOPE IS PERPENDICULAR TO PEDESTRIAN TRAVEL.

(a) TRANSITION RUNNING SLOPE NEEDS TO BE CONSTANT ACROSS ENTIRE CURB CUT. WARP GUTTER PAN TO MEET REQUIRED TRANSITION SLOPE AT CURB CUT.

EXCEPTION:

(b) SLOPE REQUIREMENTS DO NOT APPLY AT MID-BLOCK CROSSINGS.

(c) PARALLEL RAMPS ARE NOT REQUIRED TO EXCEED 15-FEET IN LENGTH.

(d) CROSS SLOPE REQUIREMENT DOES NOT APPLY AT PERPENDICULAR RAMP MID-BLOCK CROSSING.

NOTES:

1. CONFIGURATION OF RAMPS AND LANDINGS MAY BE CHANGED BUT MUST MEET PEDESTRIAN RAMP DIMENSION AND SLOPE REQUIREMENTS. SPECIFIC SITE CONDITIONS WILL VARY. THE USE OF FLARES, CURBWALLS, ETC. ARE AT THE DISCRETION OF THE ENGINEER.
2. PERPENDICULAR AND PARALLEL PEDESTRIAN RAMPS SHOWN ON THIS DRAWING ARE ACCEPTABLE FOR USE AT MID BLOCK OR CORNER INSTALLATIONS. REFER TO STD DWG GW 5B AND GW 5C FOR EXAMPLES OF CORNER INSTALLATIONS.
3. PROVIDE DETECTABLE WARNING SURFACE FOR FULL WIDTH OF RAMP, LANDING, OR CURB CUT. SEE DETAIL A FOR DETECTABLE WARNING SURFACE DIMENSIONS.
4. LOCATE DETECTABLE WARNING SURFACE SO THAT THE EDGE NEAREST THE STREET IS 6" TO 8" FROM THE CURB LINE.
5. PROVIDE DETECTABLE WARNING SURFACE THAT CONTRASTS WITH ADJACENT WALKING SURFACE, EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT. ACCEPTABLE COLORS INCLUDE: RED, BLACK, OR YELLOW.
6. USE CLASS AA(AE) CONCRETE.
7. USE UNTREATED BASE COURSE UNDER ALL CONCRETE FLATWORK.

REVISIONS			
NO.	DATE	APPR.	REMARKS
1	06/30/05	L.M.	PERPENDICULAR PEDESTRIAN RAMP DETAIL MODIFIED.
2	02/23/06	L.M.	SECTION A-A, B-B, AND C-C MODIFIED TO CLARITY "T" DIMENSION.

UTAH DEPARTMENT OF TRANSPORTATION

STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — FEB.23,2006 DATE

CHAIRMAN STANDARDS COMMITTEE APPROVED — FEB.23,2006 DATE

DEPUTY DIRECTOR

PEDESTRIAN ACCESS

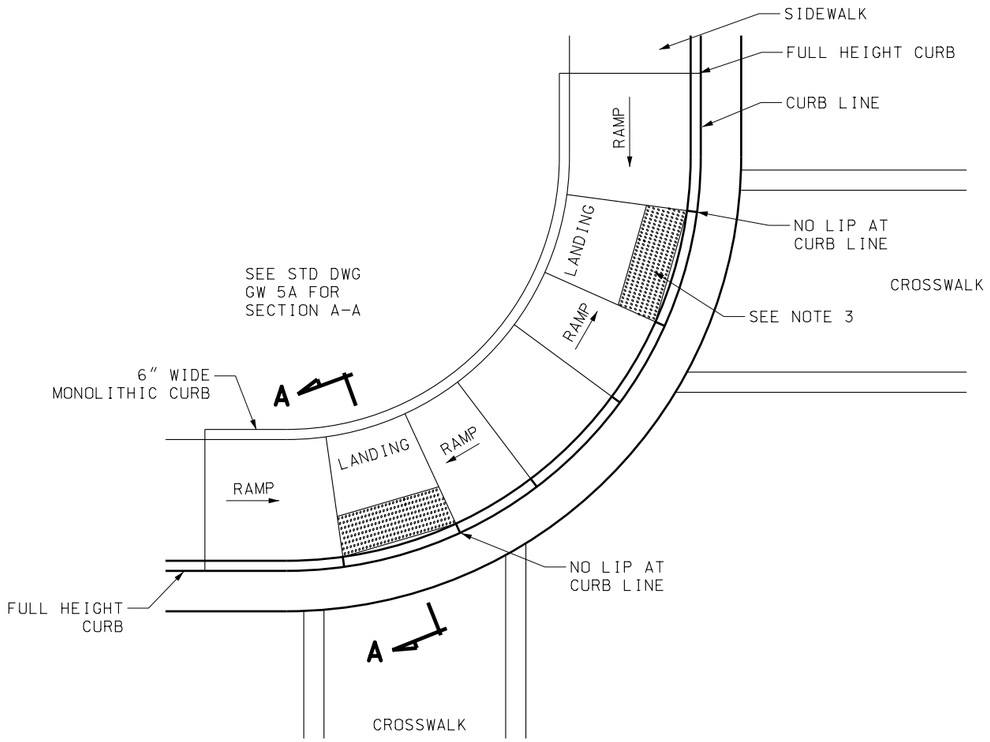
STANDARD DRAWING TITLE

STD DWG

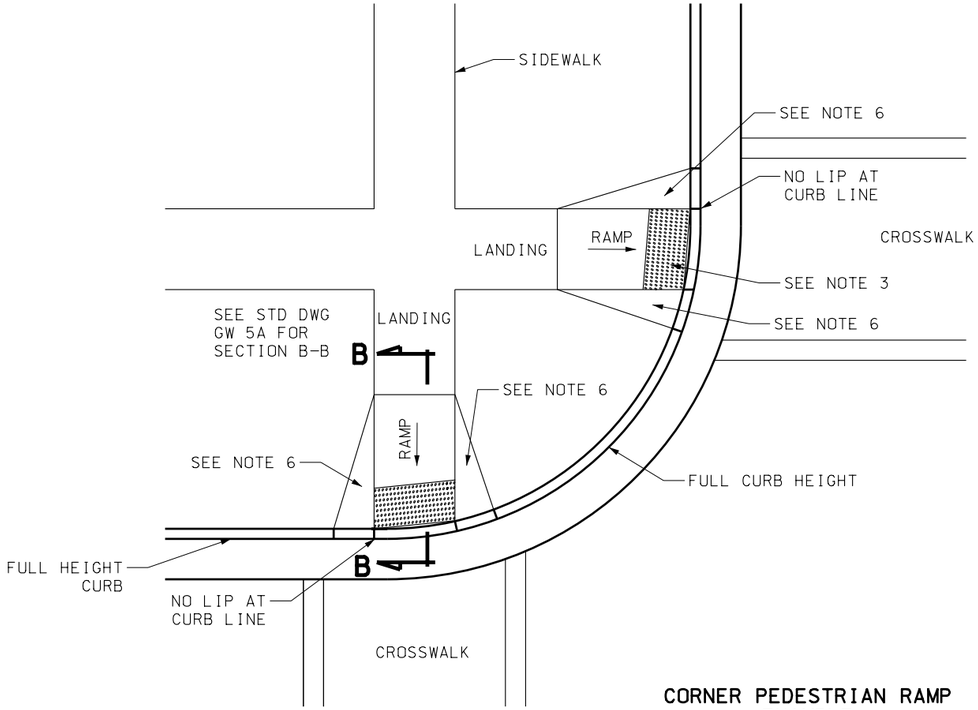
GW 5A

DGN File:L:\Standard Drawings\Imperial\2005Approved\Change05Approved\gw05A.dgn

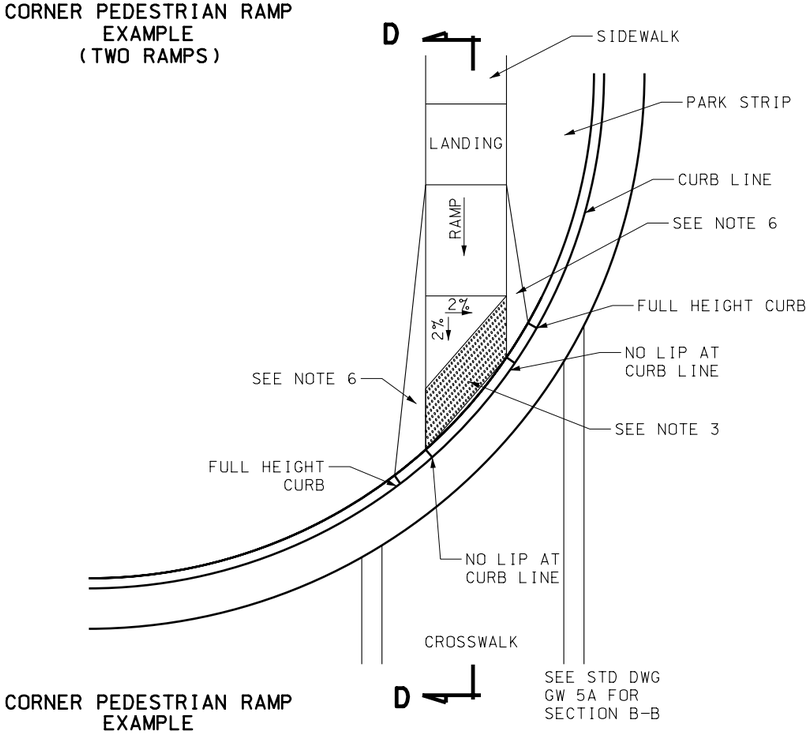
02-MAR-2006



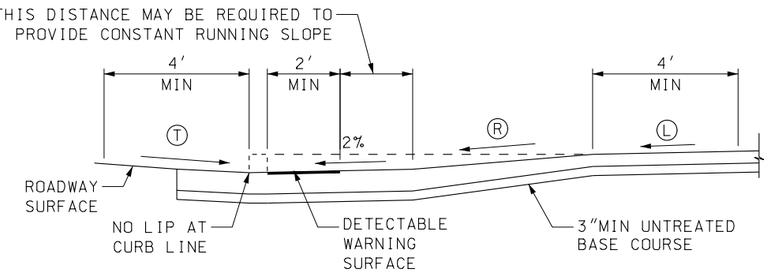
CORNER PEDESTRIAN RAMP
EXAMPLE
(TWO RAMPS)



CORNER PEDESTRIAN RAMP
EXAMPLE
(TWO RAMPS)



CORNER PEDESTRIAN RAMP
EXAMPLE



SECTION D-D

NOTES:

1. REFER TO STD DWG GW 5A FOR PEDESTRIAN ACCESS RAMP DETAIL AND SLOPE REQUIREMENTS.
2. PROVIDE DETECTABLE WARNING SURFACE FOR FULL WIDTH OF RAMP, LANDING, OR CURB CUT. SEE DETAIL A ON STD DWG GW 5A FOR DETECTABLE WARNING SURFACE DIMENSIONS.
3. LOCATE DETECTABLE WARNING SURFACE SO THAT THE EDGE NEAREST THE STREET IS 6" TO 8" FROM THE CURB LINE.
4. WHEN DETECTABLE WARNING SURFACE IS CUT, GRIND REMAINING PORTION OF ANY CUT DOMES. SEAL ALL CUT PANEL EDGES TO PREVENT WATER DAMAGE.
5. LOCATE CURB CUT WITHIN CROSSWALK.
6. WARP FLATWORK TO MATCH TOP OF CURB AND GUTTER SLOPE 25% (1V:4H).

REVISIONS

NO.	DATE	APPR.	REMARKS
1	06/30/05	L.M.	CORNER PEDESTRIAN RAMP EXAMPLE DETAIL MODIFIED.
2	02/23/06	L.M.	SECTION A-A, B-B, AND C-C MODIFIED TO CLARITY "T" DIMENSION.

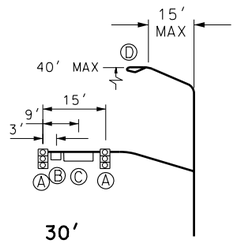
UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — FEB.23,2006 DATE
CHAIRMAN STANDARDS COMMITTEE APPROVED — FEB.23,2006 DATE
DEPUTY DIRECTOR

PEDESTRIAN ACCESS
STANDARD DRAWING TITLE

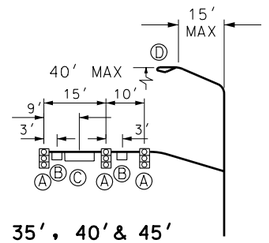
STD DWG
GW 5B

DESIGN INFORMATION

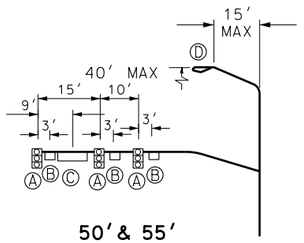


30′ MAST ARM

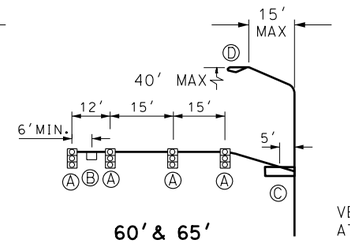
FIELD CUT END OF MAST ARM IF 25′ MAST ARM LENGTH IS REQUIRED. REQUISITION 35′/ 40′ MAST ARM HARDWARE KIT FOR CORRECT SIZE END CAP.



35′, 40′& 45′ MAST ARMS

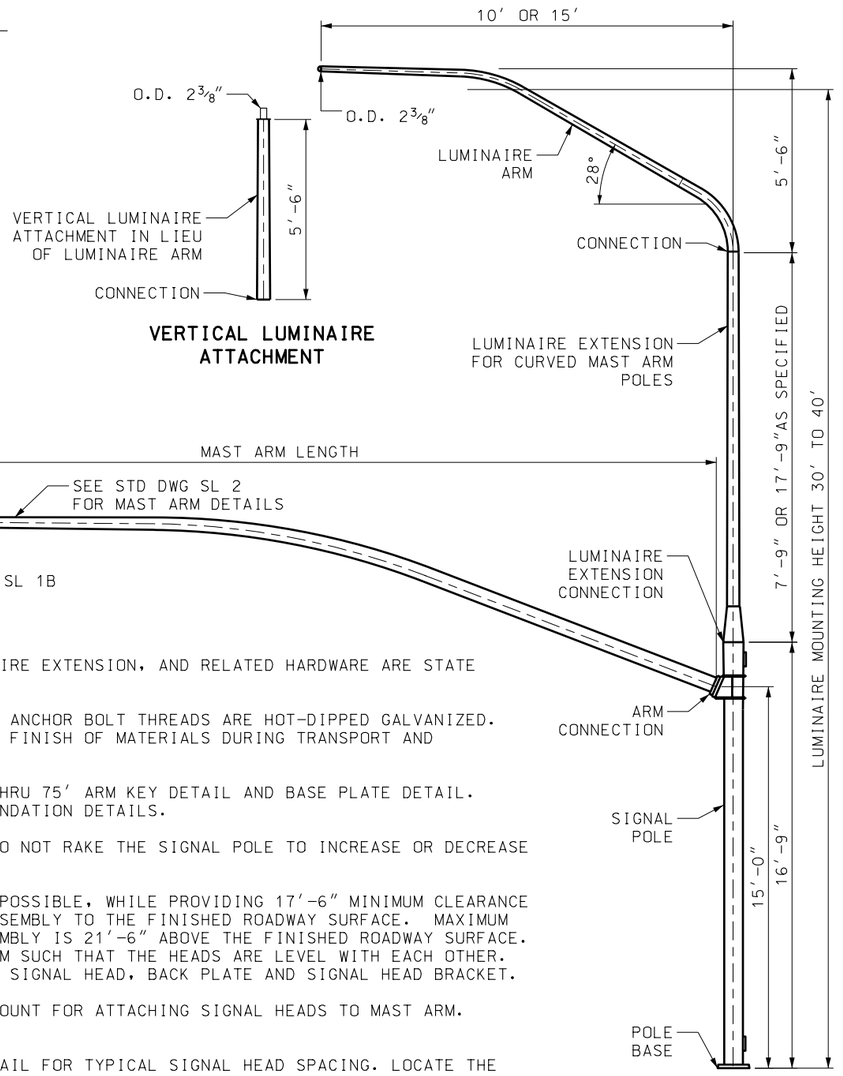


50′& 55′ MAST ARMS



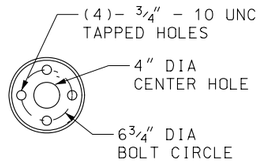
60′& 65′ MAST ARMS

DEVICE		DESCRIPTION/SIZE	PROJECTED AREA (SF)	WEIGHT(LBS)
Ⓐ	SIGNAL	12″, 3-SECTION WITH BACK PLATE	8.7	55
Ⓑ	SIGN	REGULATORY 24″ x 30″	5.0	20
Ⓒ	SIGN	STREET NAME 22″ x 96″ (MAX)	10.7	43
Ⓓ	LUMINAIRE	ROADWAY LUMINAIRE	3.3	65

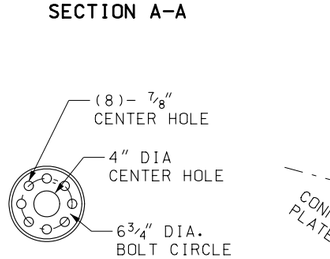


VERTICAL LUMINAIRE ATTACHMENT

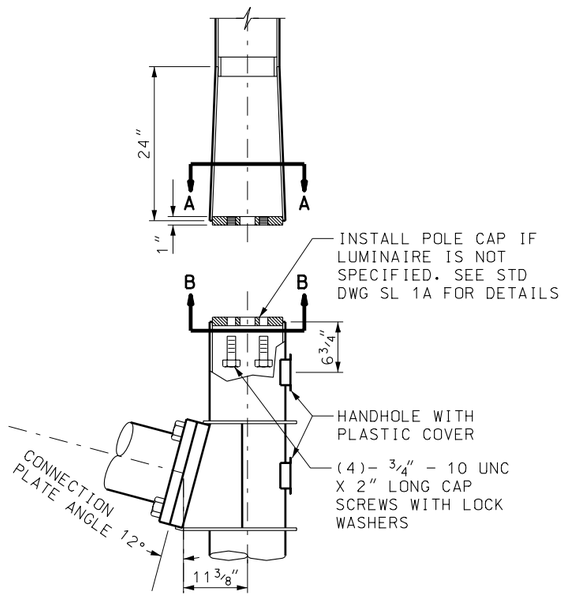
SEE STD DWG SL 4 FOR FOUNDATION REQUIREMENTS



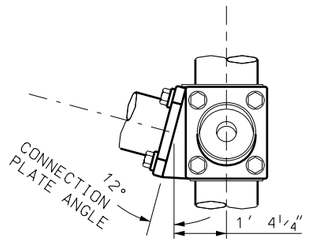
SECTION A-A



SECTION B-B



30′ THRU 65′ ARM POLE EXTENSION AND CONNECTION DETAIL



30′ THRU 45′ DUAL ARM POLE CONNECTION DETAIL

NOTES:

1. SIGNAL POLE, MAST ARM, LUMINAIRE EXTENSION, AND RELATED HARDWARE ARE STATE FURNISHED ITEMS.
2. ALL STEEL MATERIALS INCLUDING ANCHOR BOLT THREADS ARE HOT-DIPPED GALVANIZED. AVOID DAMAGING THE GALVANIZED FINISH OF MATERIALS DURING TRANSPORT AND PLACEMENT.
3. REFER TO STD DWG 1B FOR 50′ THRU 75′ ARM KEY DETAIL AND BASE PLATE DETAIL. REFER TO STD DWG SL 4 FOR FOUNDATION DETAILS.
4. INSTALL SIGNAL POLE PLUMB. DO NOT RAKE THE SIGNAL POLE TO INCREASE OR DECREASE SIGNAL HEAD CLEARANCE.
5. PLACE SIGNAL HEADS AS LOW AS POSSIBLE, WHILE PROVIDING 17′-6″ MINIMUM CLEARANCE FROM BOTTOM OF SIGNAL HEAD ASSEMBLY TO THE FINISHED ROADWAY SURFACE. MAXIMUM ELEVATION OF SIGNAL HEAD ASSEMBLY IS 21′-6″ ABOVE THE FINISHED ROADWAY SURFACE. PLACE SIGNAL HEADS ON MAST ARM SUCH THAT THE HEADS ARE LEVEL WITH EACH OTHER. SIGNAL HEAD ASSEMBLY INCLUDES SIGNAL HEAD, BACK PLATE AND SIGNAL HEAD BRACKET.
6. PROVIDE SIGNAL HEAD BRACKET MOUNT FOR ATTACHING SIGNAL HEADS TO MAST ARM. SEE STD DWG SL 2 FOR DETAILS.
7. FOLLOW DESIGN INFORMATION DETAIL FOR TYPICAL SIGNAL HEAD SPACING. LOCATE THE CENTER OF END SIGNAL HEAD 1′ FROM THE END OF MAST ARM. FOR NON-TYPICAL INSTALLATIONS PROVIDE NO LESS THAN 8′- 0″ MINIMUM SPACING BETWEEN SIGNAL HEADS. DO NOT LOAD MAST ARM MORE AGGRESSIVELY THAN SHOWN WITHOUT CHECKING WITH MANUFACTURER.
8. INSTALL POLE CAP ON TOP OF SIGNAL POLE IF LUMINAIRE EXTENSION IS NOT USED. SEE STD DWG SL 1B FOR DETAIL.

STATE FURNISHED ITEMS	
ITEM	**CONTENTS**
MAST ARM SIGNAL POLE WITH HARDWARE KIT	MAST ARM SIGNAL POLE, CONNECTION BOLTS, PLASTIC HANDHOLE COVERS, POLE CAP, AND SCREWS
DUAL MAST ARM SIGNAL POLE WITH HARDWARE KIT	MAST ARM SIGNAL POLE, CONNECTION BOLTS, PLASTIC HANDHOLE COVERS, POLE CAP, AND SCREWS
MAST ARM WITH HARDWARE KIT	MAST ARM, END CAP AND SCREWS, AND THRU BOLT (FOR TWO-PIECE ARMS)
LUMINAIRE EXTENSION WITH HARDWARE KIT	LUMINAIRE EXTENSION, CONNECTION BOLTS, WASHERS, AND NUTS
LUMINAIRE ARM OR VERTICAL ATTACHMENT	LUMINAIRE ARM OR VERTICAL ATTACHMENT

NO.	DATE	APPR.	REMARKS
1	02/23/06	L.M.	ENTIRE DRAWING REVISED.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — FEB.23.2006 DATE — DEPUTY DIRECTOR

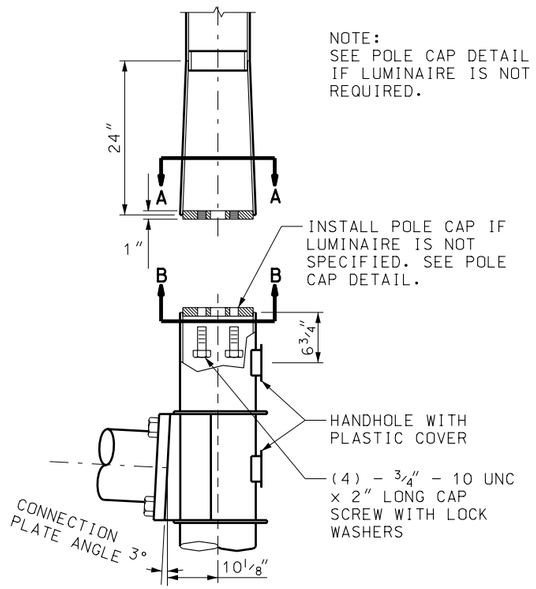
CHAIRMAN STANDARDS COMMITTEE APPROVED — FEB.23.2006 DATE

TRAFFIC SIGNAL MAST ARM POLE AND LUMINAIRE EXTENSION

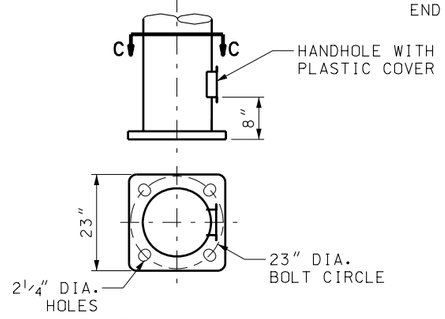
STANDARD DRAWING TITLE

STD DWG
SL 1A

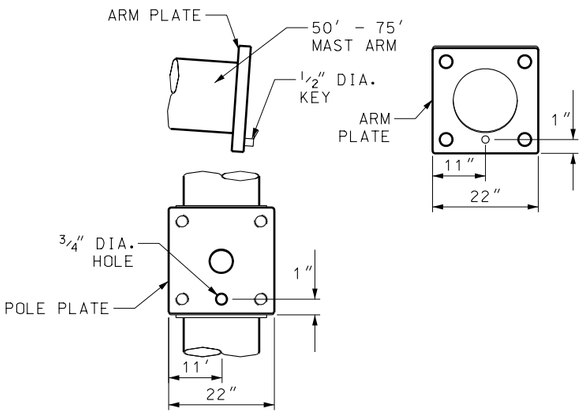
DGN File:L:\Standard Drawings\Imperial\2005Approved\Change6Approved\sl01A.dgn
02-MAR-2006



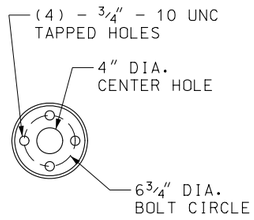
70′ THRU 75′ ARM POLE EXTENSION AND CONNECTION DETAIL



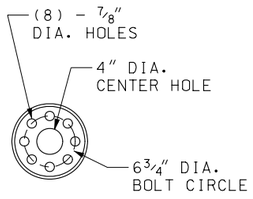
SECTION C–C TYPICAL BASE PLATE DETAIL



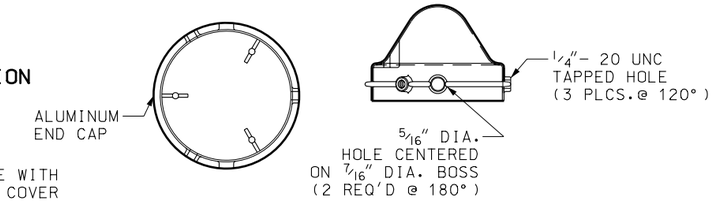
50′ THRU 75′ ARM AND POLE KEY DETAIL



SECTION A–A

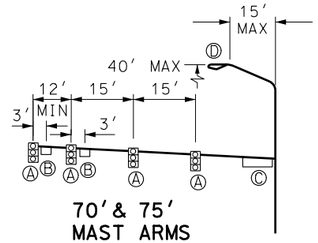


SECTION B–B



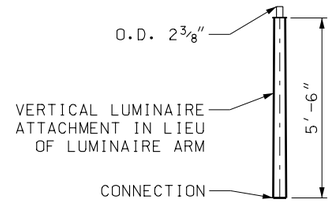
ARM END CAP DETAIL

DESIGN INFORMATION

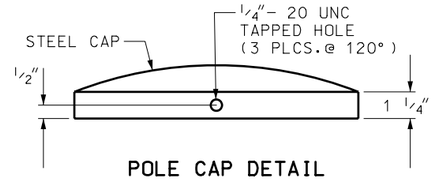


70′ & 75′ MAST ARMS

DEVICE	DESCRIPTION/SIZE	PROJECTED AREA (SF)	WEIGHT(LBS)
Ⓐ SIGNAL	12″, 3-SECTION WITH BACK PLATE	8.7	55
Ⓑ SIGN	REGULATORY 24″ x 30″	5.0	20
Ⓒ SIGN	STREET NAME 22″ x 96″ (MAX)	10.7	43
Ⓓ LUMINAIRE	ROADWAY LUMINAIRE	3.3	65



VERTICAL LUMINAIRE ATTACHMENT



POLE CAP DETAIL

NOTE:

1. SEE STD DWG SL 1A FOR SIGNAL POLE AND MAST ARM NOTES.

STATE FURNISHED ITEMS	
ITEM	**CONTENTS**
MAST ARM SIGNAL POLE WITH HARDWARE KIT	MAST ARM SIGNAL POLE, CONNECTION BOLTS, PLASTIC HANDHOLE COVERS, POLE CAP, SCREWS
MAST ARM WITH HARDWARE KIT	MAST ARM, END CAP AND SCREWS, AND THRU BOLT
LUMINAIRE EXTENSION WITH HARDWARE KIT	LUMINAIRE EXTENSION, CONNECTION BOLTS, WASHERS, AND NUTS
LUMINAIRE ARM OR VERTICAL ATTACHMENT	LUMINAIRE ARM OR VERTICAL ATTACHMENT

NO.	DATE	APPR.	REMARKS
1	02/23/06	L.M.	ENTIRE DRAWING REVISED.

REVISIONS

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

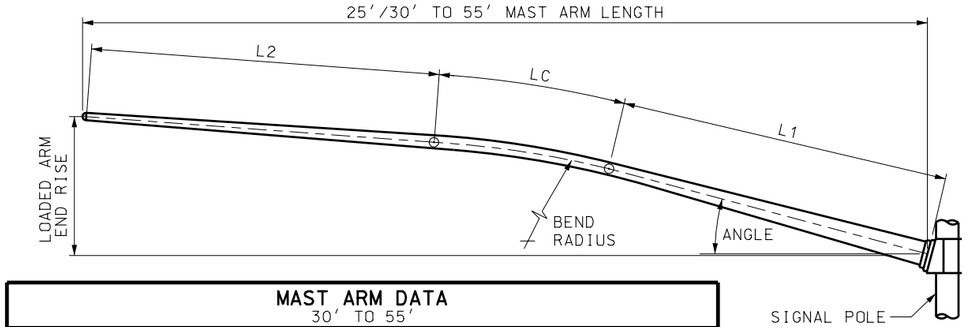
RECOMMENDED FOR APPROVAL — FEB.23.2006 — DATE
CHAIRMAN STANDARDS COMMITTEE APPROVED — DATE
DEPUTY DIRECTOR — FEB.23.2006 — DATE

TRAFFIC SIGNAL MAST ARM POLE AND LUMINAIRE EXTENSION

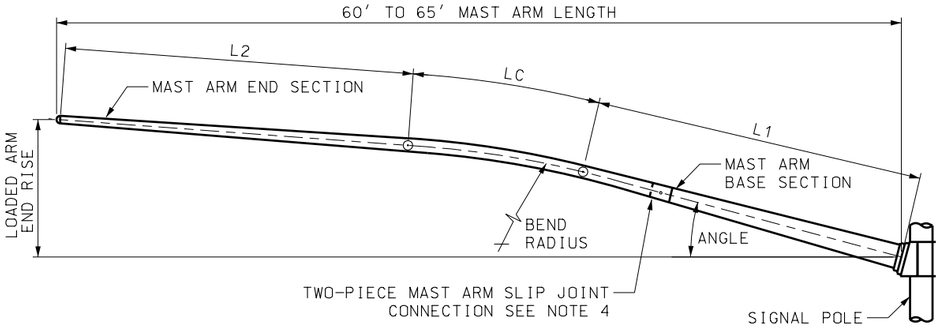
STANDARD DRAWING TITLE

STD DWG
SL 1B

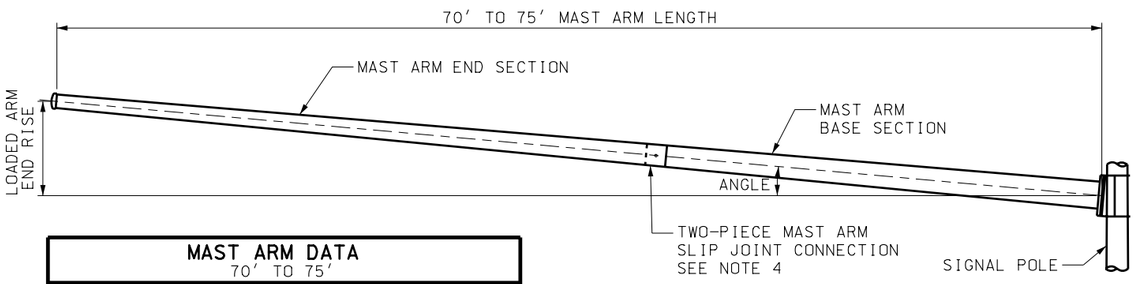
DGN File:L:\Standard Drawings\Imperial\2006Approved\Change6Approved\sl01B.dgn
02-MAR-2006



MAST ARM DATA 30′ TO 55′						
LENGTH	LOADED ARM END RISE	ANGLE	BEND RADIUS	L1	LC	L2
30′	5′– 6″	16°	25′	15.79′	6.33′	8.80′
35′	5′– 6″	16°	70′	10.07′	17.72′	7.86′
40′	5′– 6″	16°	70′	9.75′	17.10′	13.78′
45′	5′– 6″	16°	70′	9.58′	16.49′	19.57′
50′	6′– 0″	13°	70′	15.95′	14.05′	20.66′
55′	6′– 0″	13°	70′	15.67′	13.44′	26.56′



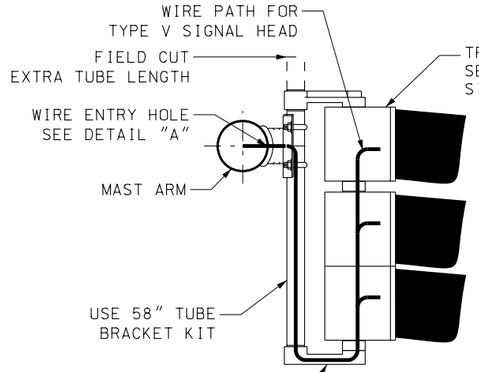
SIGNAL ARM DATA 60′ AND 65′								
LENGTH	LOADED ARM END RISE	ANGLE	BASE SECTION	END SECTION	BEND RADIUS	L1	LC	L2
60′	6′– 0″	12°	18.49′	44.87′	70′	21.38′	10.38′	28.86′
65′	6′– 0″	12°	18.49′	49.87′	70′	21.33′	9.77′	34.55′



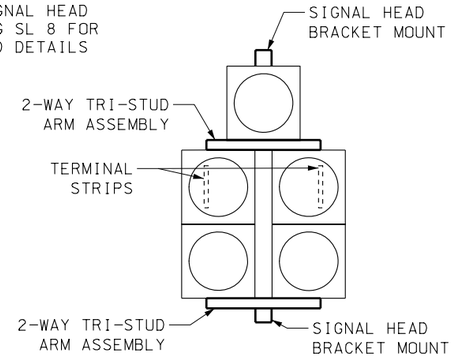
MAST ARM DATA 70′ TO 75′				
LENGTH	LOADED ARM END RISE	ANGLE	BASE SECTION	END SECTION
70′	4″	3°	30.07′	42.44′
75′	7″	3°	30.07′	47.44′

NOTES:

1. SEE STD DWG SL 1A FOR SIGNAL POLE AND MAST ARM NOTES.
2. PROVIDE AND INSTALL SIGNAL HEAD BRACKET MOUNT. PROVIDE SLACK IN WIRE IN THE MAST ARM SO SIGNAL HEAD CAN ADJUST UP AND DOWN THE FULL EXTENT OF THE TUBE.
3. FIELD DRILL $1^{1}/_{2}$″ DIAMETER WIRING HOLE ALONG THE HORIZONTAL CENTROID OF THE MAST ARM AT EACH SIGNAL HEAD LOCATION. DEBURR AND INSTALL NEOPRENE GROMMET FOR WIRE PROTECTION PRIOR TO INSTALLING SIGNAL HEAD BRACKET.
4. FIELD ASSEMBLE TWO-PIECE MAST ARM SLIP JOINT TO ACHIEVE A SNUG FIT. APPLY ANTI-SIEZE COMPOUND AND PROVIDE MINIMUM OVERLAP NOT LESS THAN 1.5 TIMES INSIDE DIAMETER OF END SECTION.



TYPE V MOUNT



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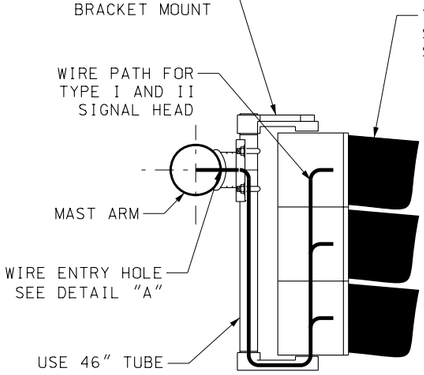
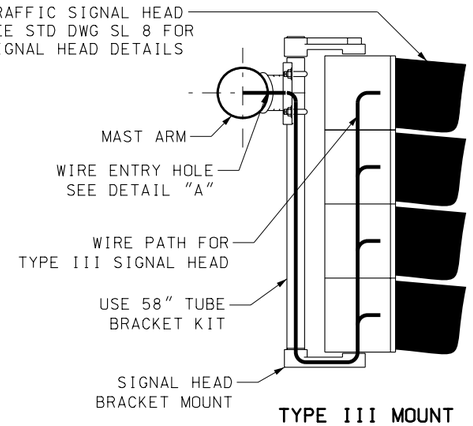
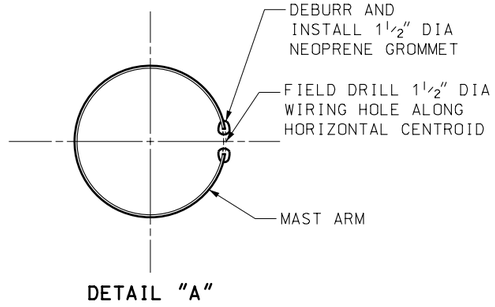


TYPE I AND II MOUNT

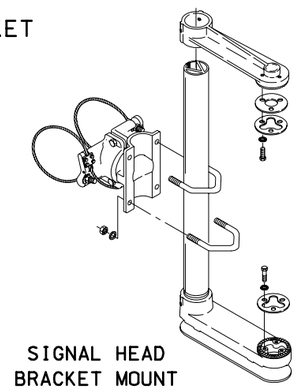


TYPE III MOUNT

SIGNAL HEAD BRACKET



DETAIL "A"



SIGNAL HEAD BRACKET MOUNT

REVISIONS

NO.	DATE	APPR.	REMARKS
1	02/23/06	L.M.	ENTIRE DRAWING REVISED.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

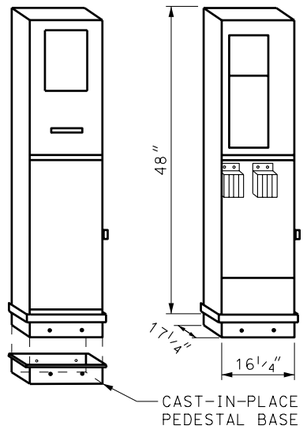
RECOMMENDED FOR APPROVAL — FEB.23,2006 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — FEB.23,2006 DATE
DEPUTY DIRECTOR

TRAFFIC SIGNAL MAST ARM DETAILS 30′ THRU 75′

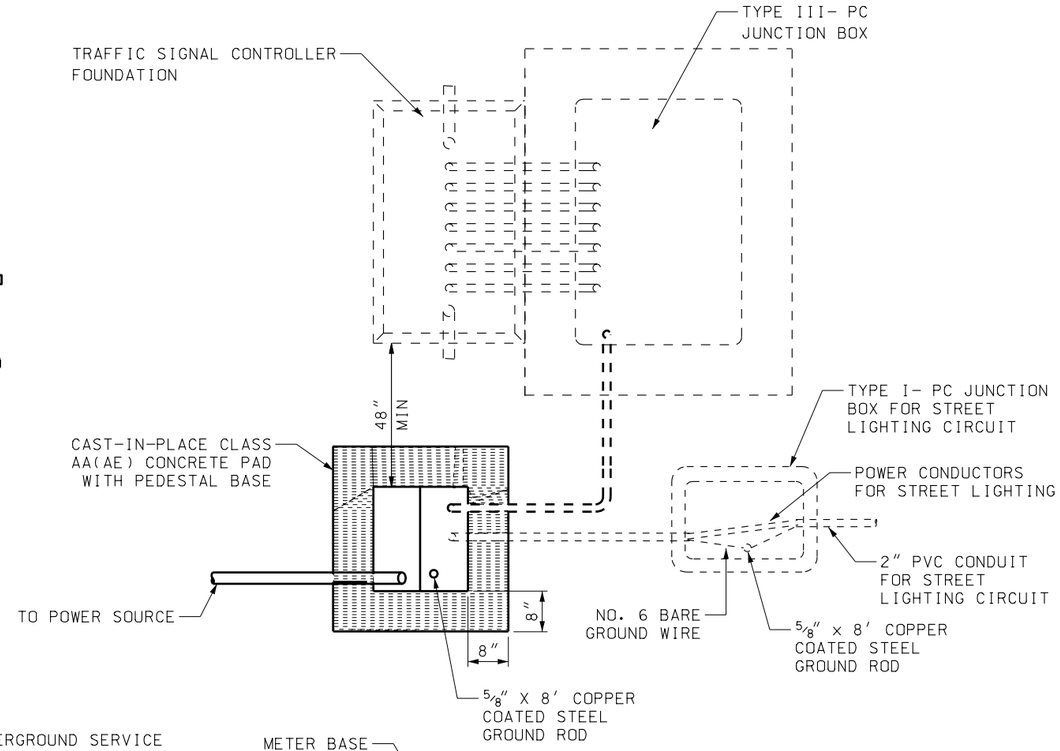
STANDARD DRAWING TITLE

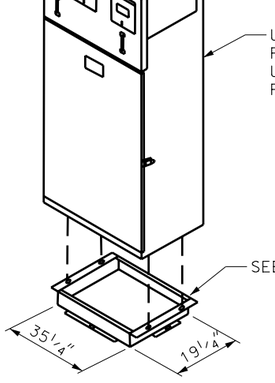
STD DWG SL 2

DGN File:L:\Standard Drawings\Imperial\2005Approved\Changes05Approved\sl02.dgn
02-MAR-2006



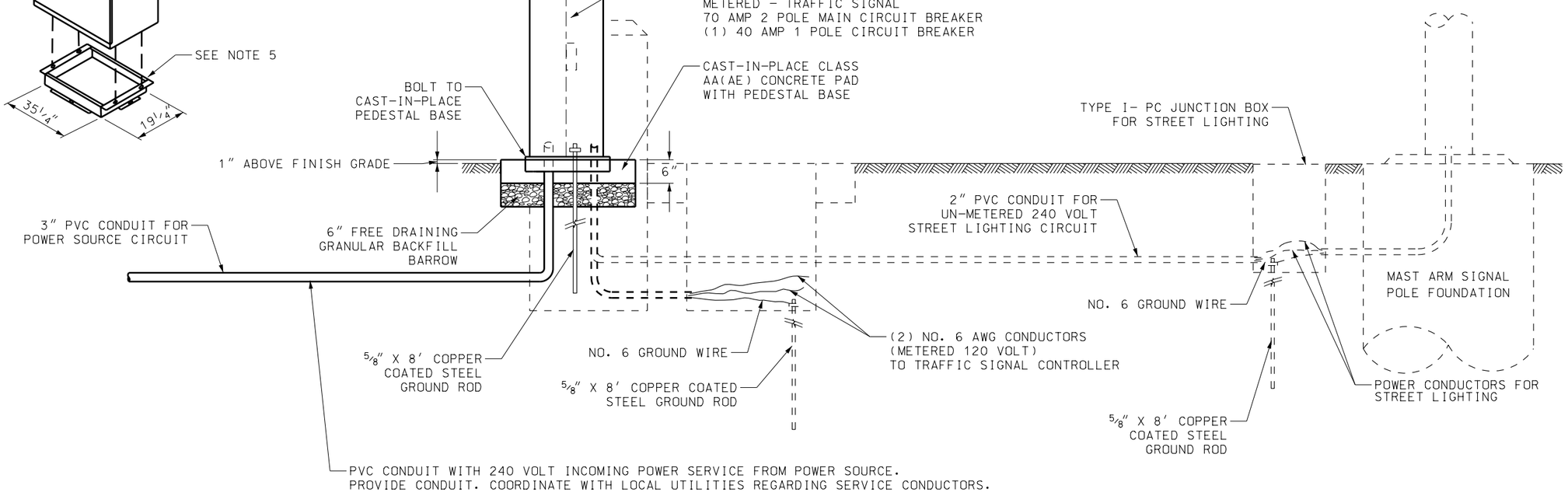
UNDERGROUND SERVICE PEDESTAL





UNDERGROUND SERVICE PEDESTAL WITH UNINTERUPTIBLE POWER SOURCE

SEE NOTE 5



NOTES:

1. LOCATE SERVICE PEDESTAL ON EITHER SIDE OF CONTROLLER FOUNDATION AS SPECIFIED. LOCATION MAY BE MODIFIED TO BEST SUIT FIELD CONDITIONS PER RESIDENT ENGINEER APPROVAL. MAINTAIN 48 INCH MINIMUM CLEARANCE AROUND EACH UNIT WITH DOORS OPENED TO ANY POSITION.

2. LOCATE SERVICE PEDESTAL AND CONTROLLER SO WATER DRAINS AWAY FROM FOUNDATIONS AND JUNCTION BOXES. SITE PREPARATION, INCLUDING GRADING, MAY BE REQUIRED BEFORE PLACING EQUIPMENT.

3. INCLUDE METER SOCKET WITH TEST BLOCK (SAFETY SOCKET) REQUIRED FOR CIRCUIT BREAKERS.

4. PROVIDE UNDERGROUND SERVICE PEDESTAL:

   A. RATED 100 AMP AT 120/240 VOLTS.
   B. PROVIDE FOR SIX FULL SIZE POLES (INCLUDING MAINS) FOR BOTH METERED AND UN-METERED CIRCUIT BREAKER INTERIORS.
   C. USE PLUG-IN CIRCUIT BREAKERS.
   D. LABEL ALL BREAKERS.
   E. USE DETACHABLE BASE FOR PRE-INSTALLATION IN CONCRETE FOUNDATION.
   F. SECURE PIANO HINGED DOORS WITH MASTER PADLOCK NO. P-848.

5. IF UNDERGROUND SERVICE PEDESTAL WITH UNINTERUPTIBLE POWER SOURCE IS BEING INSTALLED, PROVIDE SIMILAR CONCRETE PAD TO FIT UNIT WITH 8 INCHES AROUND BASE AND 6 INCHES THICK.

NO.	DATE	APPR.	REMARKS
1	02/23/06	L.M.	ENTIRE DRAWING REVISED.

REVISIONS

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — FEB.23,2006 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — FEB.23,2006 DATE
DEPUTY DIRECTOR

UNDERGROUND SERVICE PEDESTAL DETAILS

STANDARD DRAWING TITLE

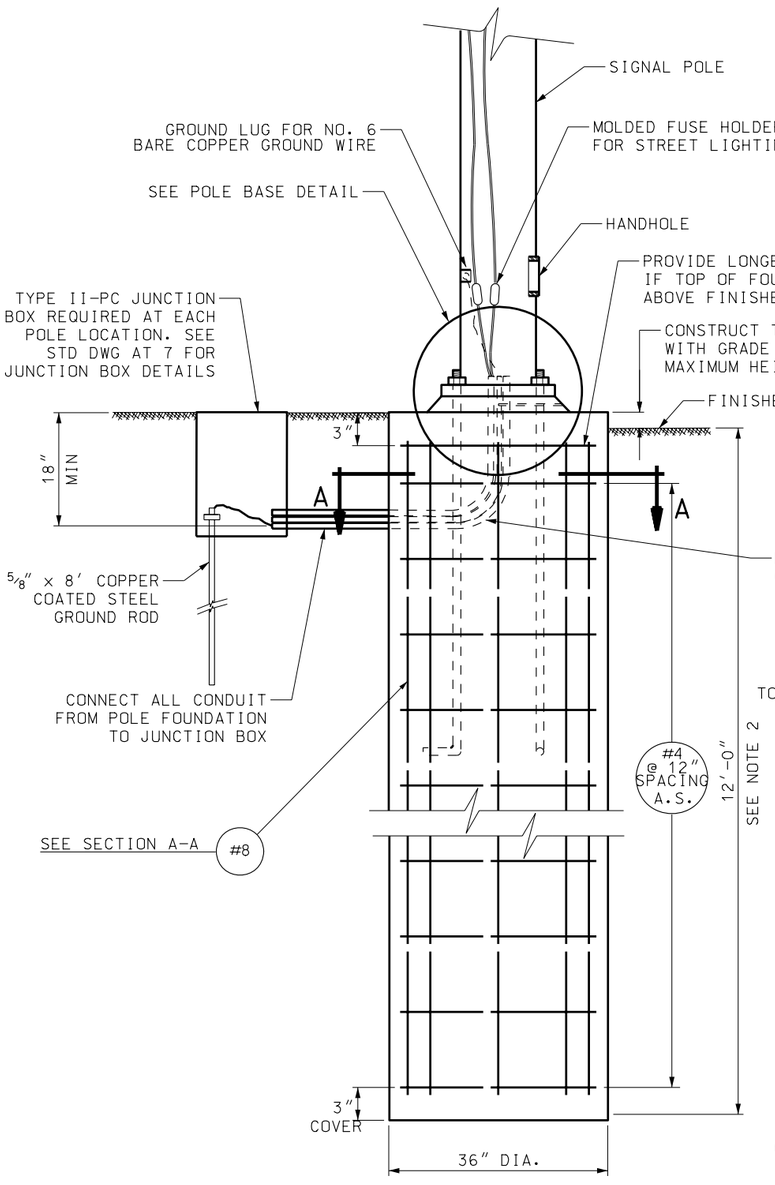
STD DWG
SL 3

DGN File:L:\Standard Drawings\Imperial\2006Approved\Changes6Approved\sl03.dgn
02-MAR-2006

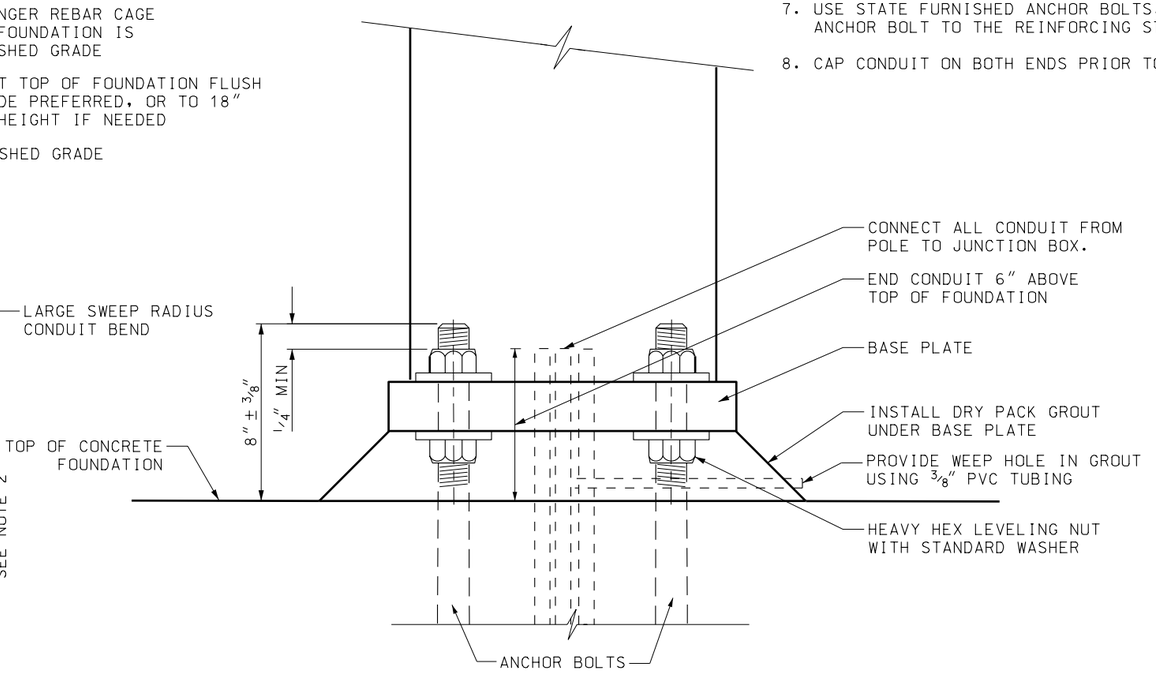
STATE FURNISHED ITEMS	
ITEM	**CONTENTS**
2″ DIA. x 66″ ANCHOR BOLT WITH HARDWARE	ANCHOR BOLT, WASHERS, AND NUTS.

NOTES:

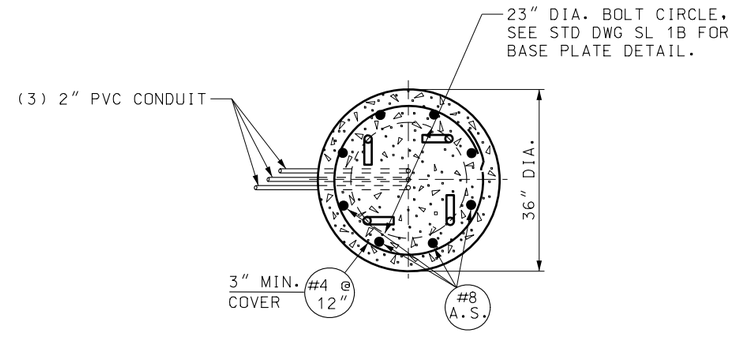
1. TIGHTEN ANCHOR BOLT NUTS TO SNUG-TIGHT PLUS 1/3 TURN.
2. CAST ALL FOUNDATIONS IN PLACE AGAINST UNDISTURBED EARTH WITH 12′ OF ITS LENGTH BELOW FINISH GRADE. DO NOT WELD REINFORCING STEEL.
3. USE A CIRCULAR FORM FOR THE TOP 18″ OF FOUNDATION EMBEDMENT.
4. INSTALL ANCHOR BOLTS SQUARE WITH ROADWAY OR AT ANGLE SPECIFIED ON PLAN SHEETS.
5. PLACE ALL CONDUIT IN SAME TRENCH WHERE POSSIBLE.
6. USE EPOXY COATED REBARS AND CLASS AA(AE) CONCRETE FOR FOUNDATION.
7. USE STATE FURNISHED ANCHOR BOLTS. DO NOT WELD ANCHOR BOLT TO THE REINFORCING STEEL.
8. CAP CONDUIT ON BOTH ENDS PRIOR TO FOUNDATION POUR.



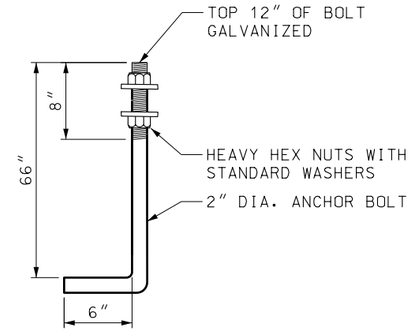
POLE FOUNDATION



POLE BASE DETAIL



SECTION A-A



2-INCH ANCHOR BOLT DETAIL
(4 REQUIRED PER SIGNAL POLE)

NO.	DATE	APPR.	REMARKS
1	02/23/06	L.M.	ENTIRE DRAWING REVISED.

REVISIONS

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

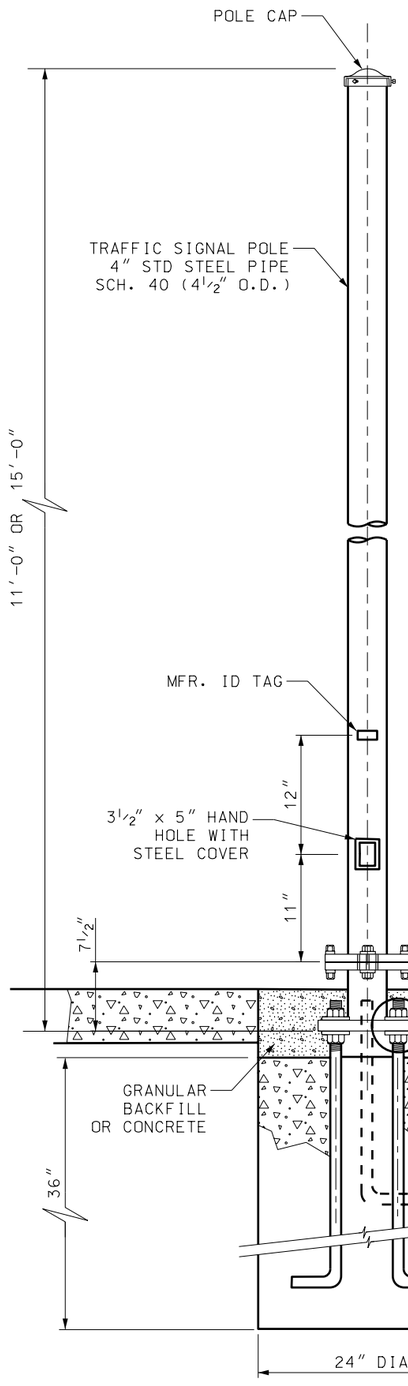
RECOMMENDED FOR APPROVAL — DEPUTY DIRECTOR — FEB.23,2006 DATE
CHAIRMAN STANDARDS COMMITTEE APPROVED — FEB.23,2006 DATE

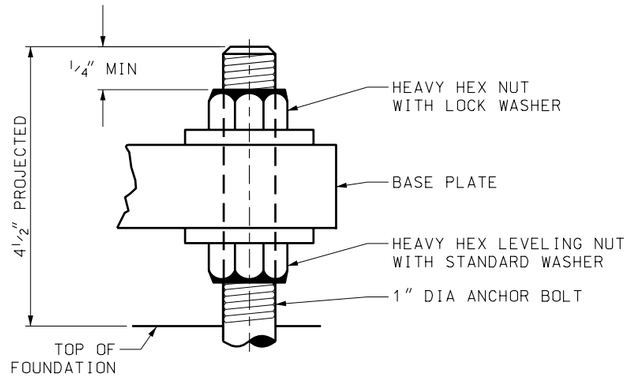
TRAFFIC SIGNAL MAST ARM POLE FOUNDATION

STANDARD DRAWING TITLE

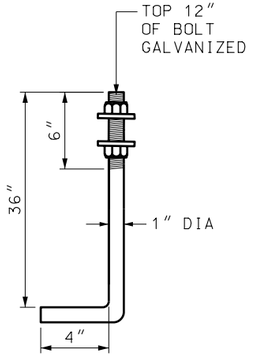
STD DWG
SL 4

DGN File:L:\Standard_Drawings\Imperial\2005Approved\vChange6Approved\sl04.dgn
02-MAR-2006

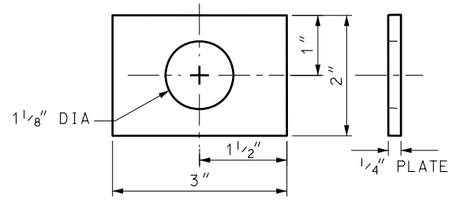




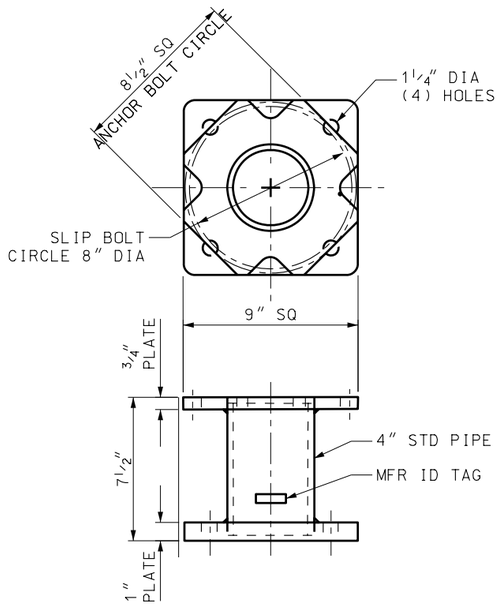
DETAIL "A"



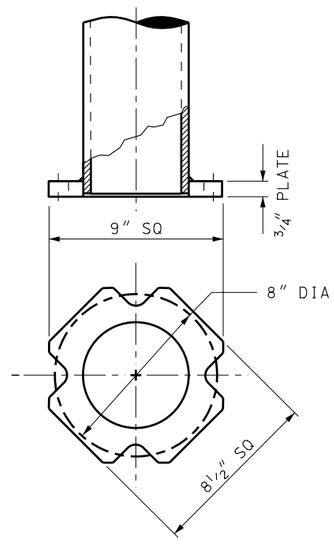
ANCHOR BOLT DETAIL
(4 REQUIRED PER SIGNAL POLE)



SLIP BOLT WASHER
(2 REQUIRED EACH BOLT)



GROUND BASE



POLE BASE

NOTES:

1. TRAFFIC SIGNAL POLE, SLIP BASE, AND RELATED HARDWARE ARE STATE FURNISHED ITEMS.
2. ALL STEEL MATERIALS INCLUDING ANCHOR BOLT THREADS ARE HOT-DIPPED GALVANIZED. AVOID DAMAGING THE GALVANIZED FINISH OF MATERIALS DURING TRANSPORT AND PLACEMENT.
3. USE CLASS AA(AE) CONCRETE FOR FOUNDATION. CAP CONDUIT ON BOTH ENDS PRIOR TO PLACING CONCRETE.
4. USE STATE FURNISHED 5/8"x 3" SLIP BOLTS. TORQUE EACH BOLT TO 40 FT/LBS, RELEASE TENSION, THEN RETORQUE TO 80 FT/LBS.
5. SEE STD DWG SN 12B FOR BREAKAWAY SUPPORT STUB HEIGHT MEASUREMENT.
6. REFER TO STD DWG SL 8 AND SL 9 FOR SIGNAL HEAD DETAILS.
7. USE STATE FURNISHED ANCHOR BOLTS.

STATE FURNISHED ITEMS	
ITEM	**CONTENTS**
TRAFFIC SIGNAL POLE WITH HARDWARE KIT	POLE, GROUND BASE, STEEL HANDHOLE COVER, POLE CAP, SLIP BOLTS, WASHERS, AND NUTS.
1" DIA. X 36" ANCHOR BOLT WITH HARDWARE	ANCHOR BOLT, WASHERS, AND NUTS.

NO.	DATE	APPR.	REMARKS
1	02/23/06	L.M.	DRAWING REFERENCE AND POLE DIMENSION ADDED TO POLE DETAIL. TYPE REMOVED FROM JUNCTION BOX CALL OUT.

REVISIONS

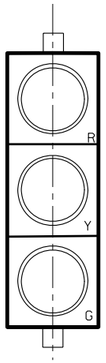
UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

RECOMMENDED FOR APPROVAL — FEB.23,2006 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — FEB.23,2006 DATE
DEPUTY DIRECTOR

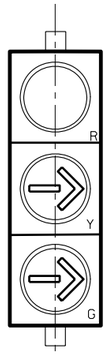
TRAFFIC SIGNAL POLE

STANDARD DRAWING TITLE

STD DWG
SL 5



TYPE I



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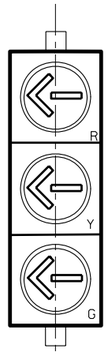

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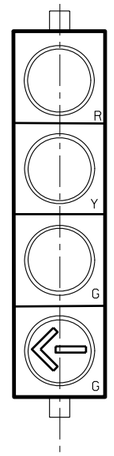
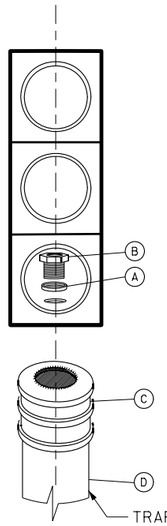


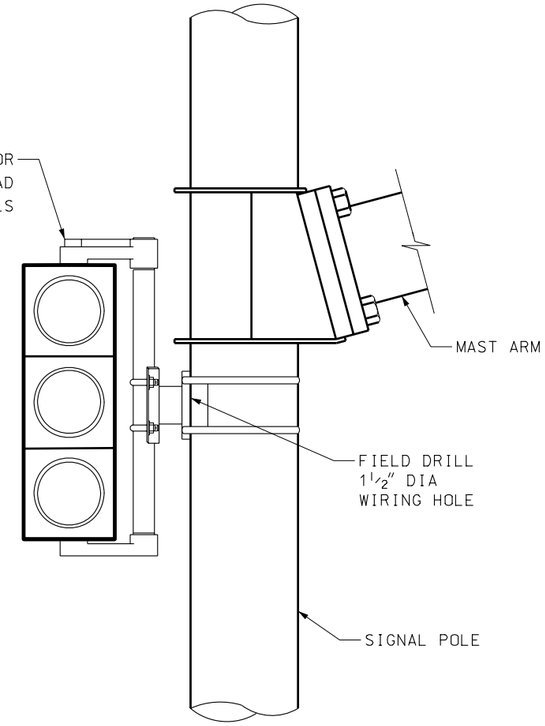
TYPE IV



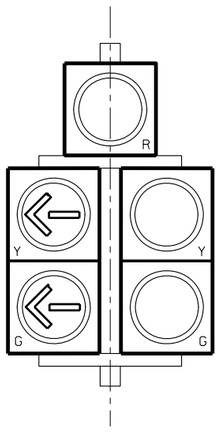
TRAFFIC SIGNAL POLE
SEE STD DWG SL 5

SIGNAL POLE TOP MOUNT

- Ⓐ 1½″ NEOPRENE WASHER
- Ⓑ 1½″ LOCK NIPPLE
- Ⓒ 4½″ INSIDE DIA POLE TOP MOUNTED TERMINAL COLLAR
- Ⓓ TRAFFIC SIGNAL POLE, SEE STD DWG SL 5.

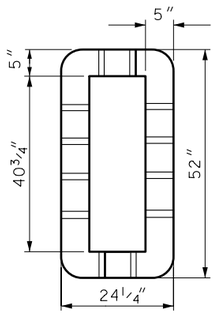


SIGNAL POLE MOUNT
NEAR SIDE SIGNAL HEAD

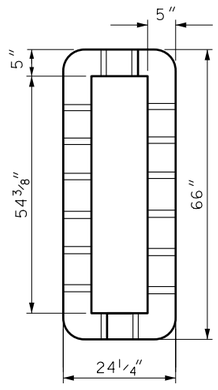


TYPE V

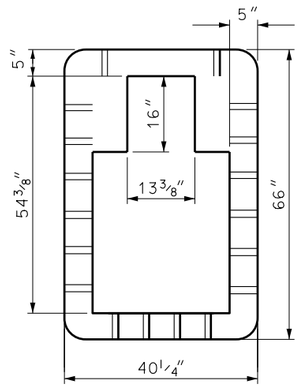
BACKPLATE
FOR TYPE I, II, & III
SIGNAL HEAD



BACKPLATE
FOR TYPE IV
SIGNAL HEAD



BACKPLATE
FOR TYPE V
SIGNAL HEAD



LOUVERED BACKPLATE DETAILS

NOTES:

1. USE 12″ x 12″ TUNNEL TYPE VISORS FOR TRAFFIC SIGNALS.
2. PROVIDE BRONZE FITTINGS AND GALVANIZED STEEL PIPE FITTINGS FOR POLE TOP MOUNT.
3. LOCATE TERMINAL BLOCK IN TOP SECTION FOR TYPE I, II, III, AND IV SIGNAL HEADS. REFER TO STD DWG SL 2 FOR WIRE PATH AND TERMINAL BLOCK LOCATIONS FOR TYPE V SIGNAL HEAD.
4. INSTALL TYPE V SIGNAL ASSEMBLIES SO THAT HINGED SIGNAL FACES SWING OPEN TO THE OUTSIDE.
5. ORIENT ALL LED LENSES FOR TOP UPWARD ALIGNMENT.
6. PROVIDE BACKPLATE FOR ALL TYPE I, II, III, AND IV SIGNAL HEADS. PROVIDE BACKPLATE FOR TYPE V SIGNAL HEAD ONLY AS SPECIFIED.

REVISIONS

NO.	DATE	APPR.	REMARKS
1	02/23/06	L.M.	TYPE II ADDED. OLD TYPE II AND III NOW TYPE III AND IV. BACKPLATE DETAILS UPDATED. NOTE 6 ADDED.

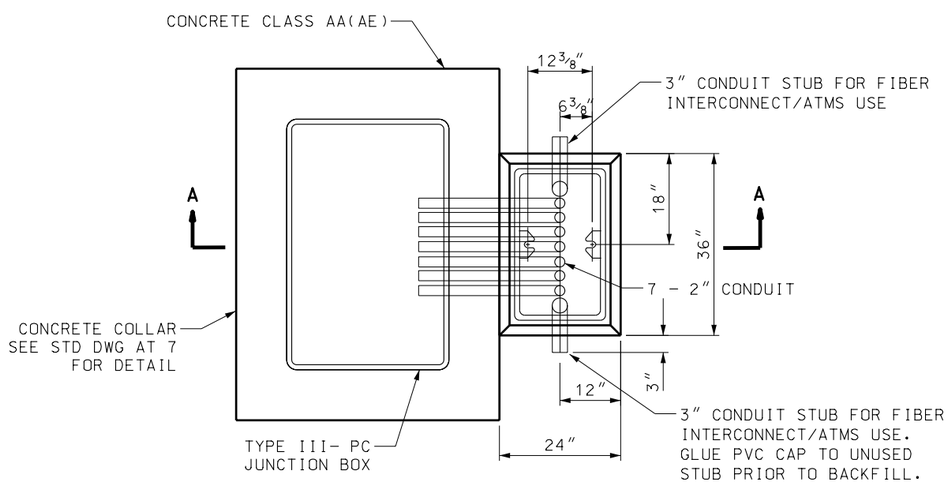
UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — FEB.23,2006 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — FEB.23,2006 DATE
DEPUTY DIRECTOR

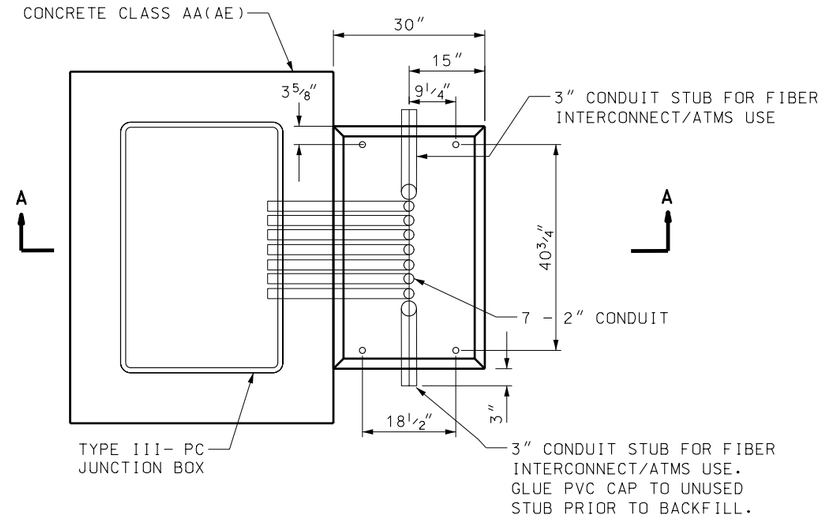
SIGNAL HEAD DETAILS

STANDARD DRAWING TITLE

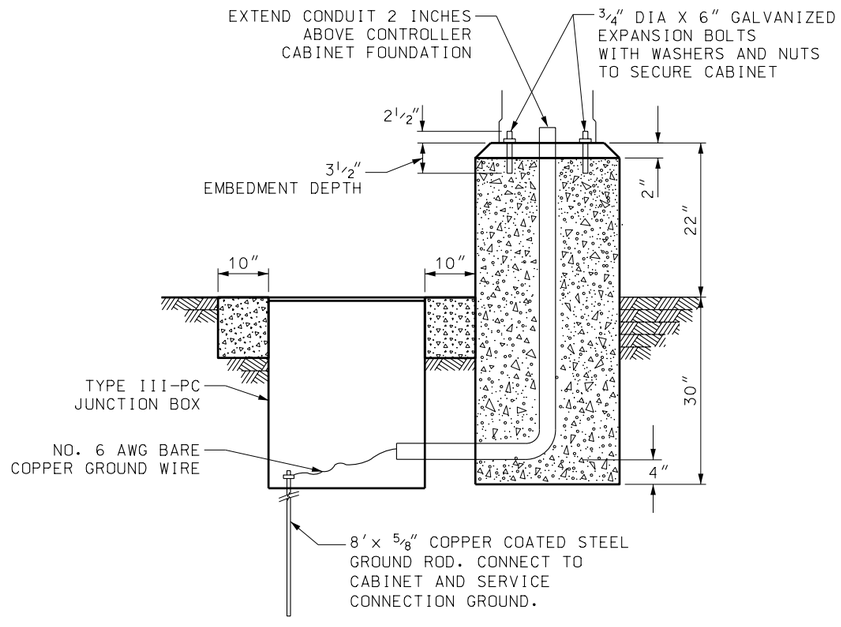
STD DWG
SL 8



TYPE 5 CABINET BASE



TYPE 6 CABINET BASE



SECTION A-A

NOTES:

1. ATTACH THE GROUNDED SIDE OF THE SERVICE PEDESTAL POWER SUPPLY TO GROUND ROD IN THE TYPE III JUNCTION BOX.
2. MAINTAIN 1" MINIMUM SPACING BETWEEN CONDUITS IN CABINET BASE. CAP OR PLUG CONDUITS AT BOTH ENDS UNTIL USED.
3. IDENTIFY AND LABEL ALL FIELD TERMINALS.
4. GROUND CABINET BY CONNECTING GROUND WIRE TO GROUND ROD IN TYPE III JUNCTION BOX.
5. PLACE ALL CONDUITS IN THE SAME TRENCH WHERE POSSIBLE.
6. SEAL ALL CONDUITS INSIDE JUNCTION BOX AND CABINET AFTER WIRING IS COMPLETE.

REVISIONS

NO.	DATE	APPR.	REMARKS
1	02/23/06	L.M.	ENTIRE DRAWING REVISED.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — FEB.23.2006 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — FEB.23.2006 DATE
DEPUTY DIRECTOR

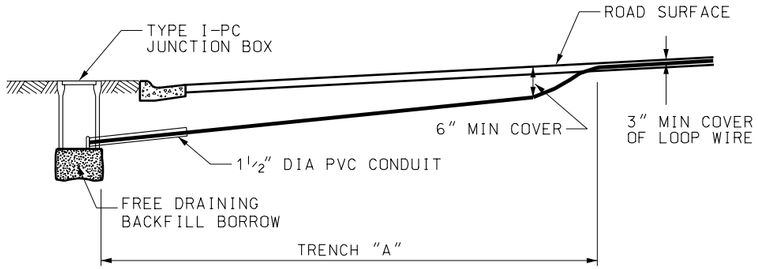
TRAFFIC SIGNAL CONTROLLER BASE DETAILS

STANDARD DRAWING TITLE

STD DWG
SL 10

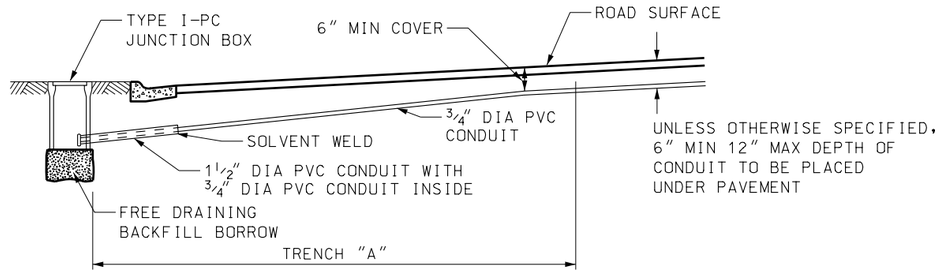
DGN File:L:\Standard_Drawings\Imperial\2005\Approved\Changes6\Approved\sl10.dgn
02-MAR-2006

SAW CUT DETAIL
(CONCRETE ONLY)

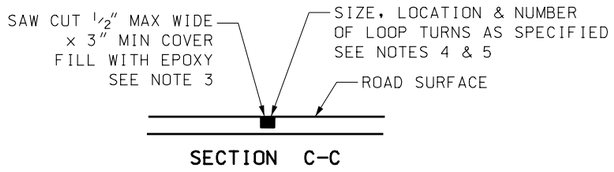


SECTION B-B

P.V.C. TRENCHED LOOP DETAIL
(ASPHALT OR UNDER NEW CONCRETE)



SECTION D-D

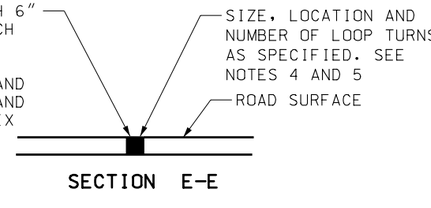


SECTION C-C

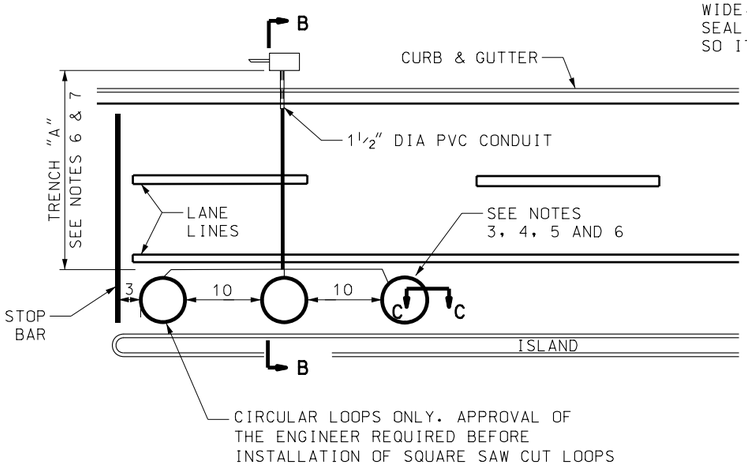
MAXIMUM TRENCH WIDTH 6" FOR BOTH CROSS TRENCH AND LOOP TRENCH

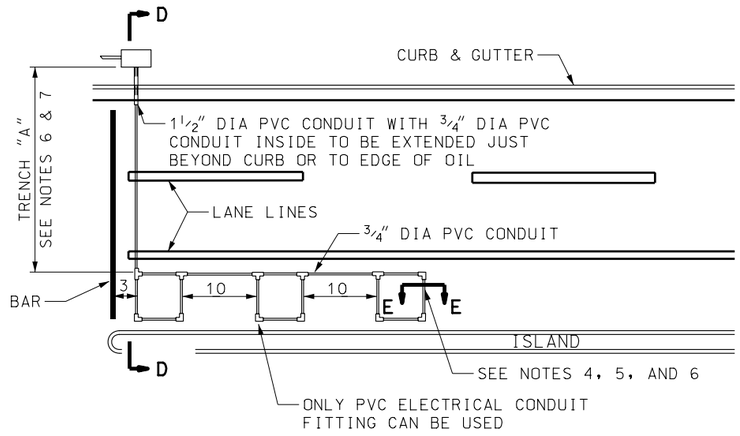
FOR TRENCH 1" WIDE AND GREATER, TACK COAT AND BACKFILL WITH HOT MIX ASPHALT (1/2" MAX AGGREGATE MIX) - COMPACT WITH FLAT NOSE ON JACK HAMMER WITH 3" MAX LIFTS

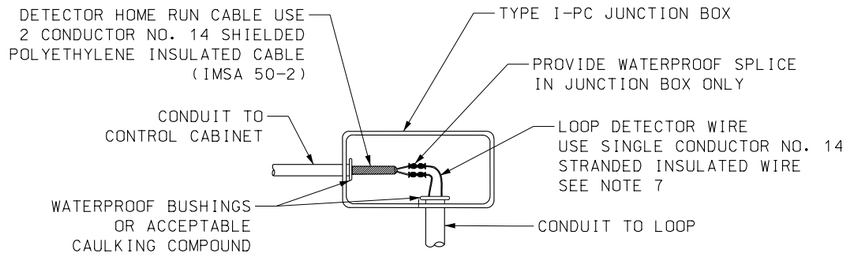
FOR TRENCH LESS THAN 1" WIDE, FILL WITH CRACK SEAL - SECURE CONDUIT SO IT DOES NOT FLOAT



SECTION E-E







LEAD-IN/HOME RUN SPLICE DETAIL

NOTES:

1. BACKFILL TRENCH WITHIN 8 HOURS OF TRENCHING WITH SPECIFIED MATERIALS.
2. USE SCHEDULE 40 PVC CONDUIT. INSTALL ALL CONDUITS IN SAME TRENCH WHERE POSSIBLE. USE INDIVIDUAL AND SEPARATE PVC CONDUIT FOR EACH LOOP AND LEAD-IN TO THE JUNCTION BOX.
3. INSTALL ALL CONDUCTORS IN SAW CUT. PLACE CABLE OR WIRE AT BOTTOM OF DRY SLOT. USE EPOXY SEAL WHICH DOES NOT CONTAIN ACETONE SOLVENT TO CLOSE SAW CUT.
4. USE 4 TURNS OF SINGLE CONDUCTOR #14 AWG CABLE ON ALL LOOPS 6' X 12' AND SMALLER. DO NOT TWIST WIRES IN LOOP.
5. SEE PLAN SHEETS FOR DETECTOR LOOP LOCATION. IF A DETECTOR LOOP LOCATION IS IN CONFLICT WITH A MANHOLE, WATER VALVE, OR PAVEMENT EXPANSION JOINT, ADJUST THE LOOP PLACEMENT FORWARD OR BACKWARD IN THE SHORTEST DIRECTION FROM THE OPTIMUM POSITION.
6. DO NOT SPLICE THE TRAFFIC SIGNAL FIELD WIRE EXCEPT THE JUNCTION BOX LOOP WIRE CONNECTIONS. TAG AND NUMBER EACH LOOP WIRE IN CONFORMANCE WITH THE DESIGN. PLACE LOOP DETECTOR WIRE COUNTER CLOCKWISE.
7. TWIST WIRES BETWEEN LOOP AND JUNCTION BOX (TRENCH "A"). USE AT LEAST ONE TWIST PER FOOT IN SAW CUTS AND AT LEAST THREE TWISTS PER FOOT IN CONDUIT. FOR SAW-CUT LOOP INSTALLATIONS, USE SINGLE CONDUCTOR NO. 14 STRANDED TYPE XLPE OR XHHW WIRE (IMSA 51-7). FOR PVC CONDUIT INSTALLATIONS, USE SINGLE CONDUCTOR NO. 14, STRANDED TYPE XHHW WIRE (IMSA 51-3).
8. INSPECT AND TEST ALL LOOPS.
9. DO NOT HOOK UP MORE THAN 4 LOOPS TO THE SAME HOMERUN CABLE OR AMPLIFIER CHANNEL.
10. PREFORMED LOOPS MAY BE USED WITH APPROVAL OF THE ENGINEER.

NO.	DATE	APPR.	REVISIONS
1	02/23/06	L.M.	ENTIRE DRAWING REVISED.

REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

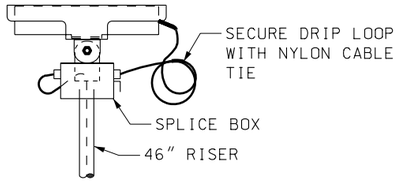
RECOMMENDED FOR APPROVAL — DEPUTY DIRECTOR — FEB.23,2006 DATE
CHAIRMAN STANDARDS COMMITTEE APPROVED — FEB.23,2006 DATE

TRAFFIC SIGNAL
LOOP DETECTOR
DETAILS

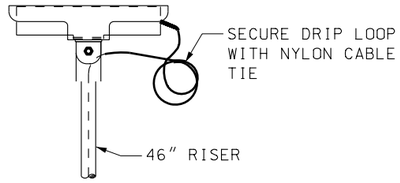
STANDARD DRAWING TITLE

STD DWG
SL 11

DGN File:L:\Standard Drawings\Imperial\2005Approved\vChange6Approved\sl11.dgn
02-MAR-2006

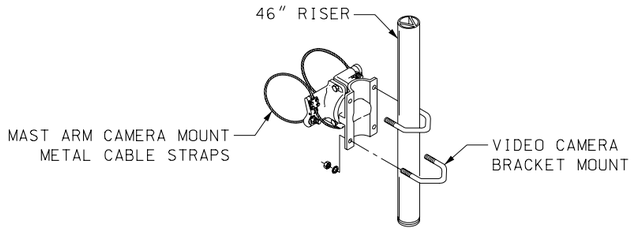


TYPE A

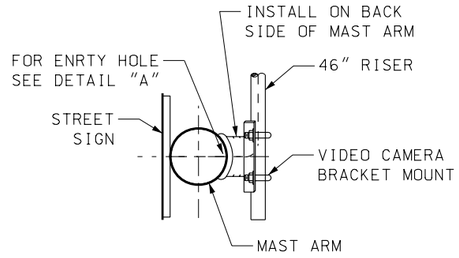


TYPE B

VIDEO DETECTION CAMERA

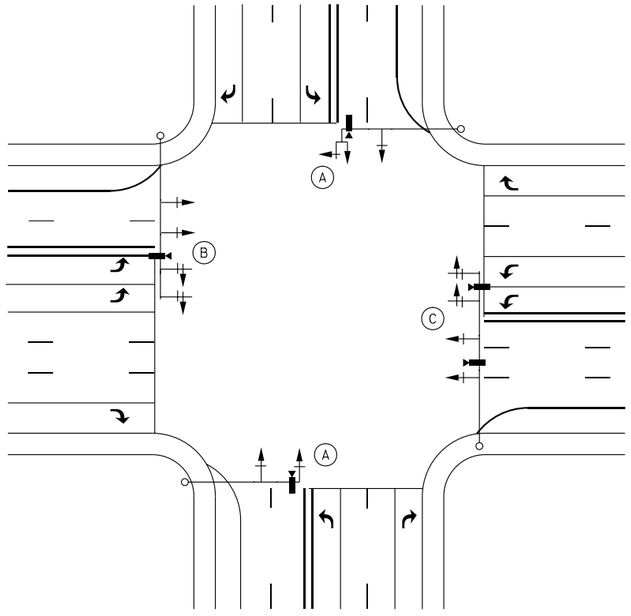


MOUNTING ASSEMBLY



MOUNTING DIRECTION

VIDEO CAMERA MOUNT DETAIL

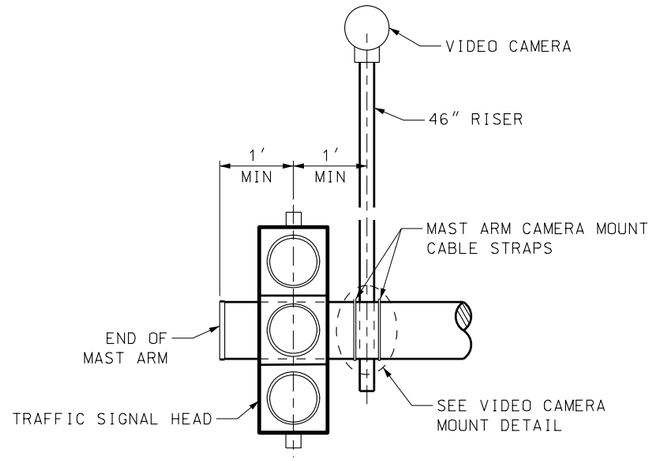


VIDEO DETECTION CAMERA PLACEMENT
APPROACH DETECTION LAYOUT

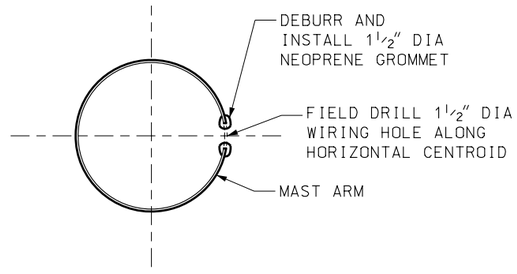
Ⓐ SINGLE LEFT TURN LANE:
PLACE CAMERA TOWARD END OF MAST ARM TO ALIGH WITH 8" WHITE LINE BETWEEN LEFT TURN LANE AND THRU LANE.

Ⓑ DOUBLE LEFT TURN LANES:
PLACE CAMERA TO ALIGH WITH 8" WHITE LINE BETWEEN LEFT TURN LANE AND THRU LANE.

Ⓒ WIDE ROADS (I.E. 2 TURN LANES AND 3 THRU LANES):
TWO CAMERAS MAY BE NEEDED. THIS IS NOT TYPICAL.



FRONT VIEW



DETAIL "A"
SEE STD DWG SL 2

NOTES:

1. SEE STD DWG SL 1A AND SL 1B FOR SIGNAL POLE AND MAST ARM NOTES AND DETAILS.
2. PLACE, AIM, AND FOCUS VIDEO DETECTION CAMERAS UNDER DIRECTION OF THE REGION SIGNAL MAINTENANCE SUPERVISOR.

REVISIONS			
1	04/28/05	T.S.	NEW DRAWING.
2	02/23/06	L.M.	ENTIRE DRAWING REVISED.
	DATE	APPR.	REMARKS

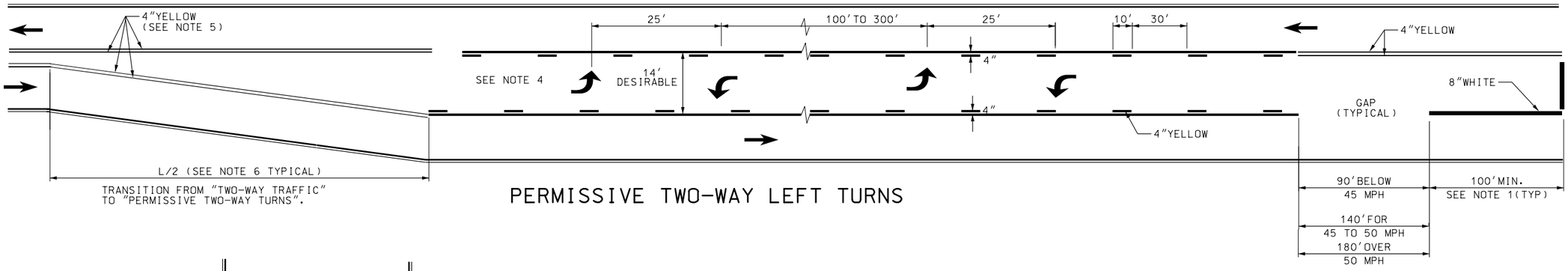
UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — FEB.23,2006 DATE
CHAIRMAN STANDARDS COMMITTEE APPROVED — FEB.23,2006 DATE
DEPUTY DIRECTOR

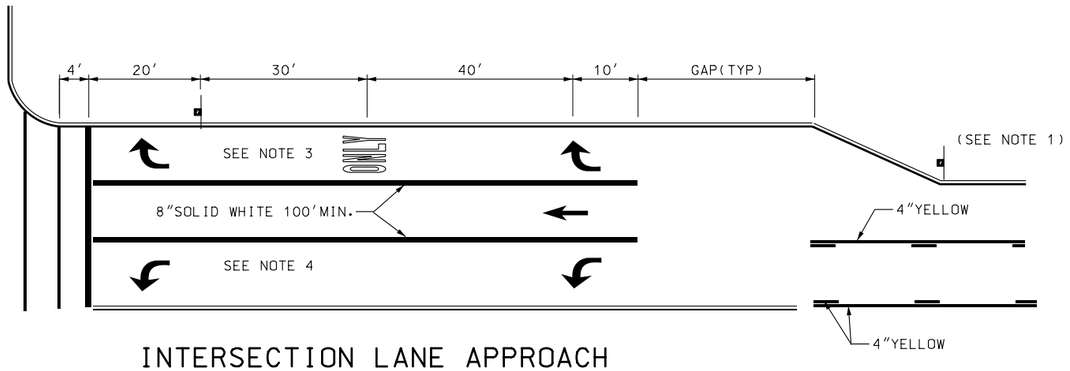
VIDEO DETECTION CAMERA MOUNT

STANDARD DRAWING TITLE

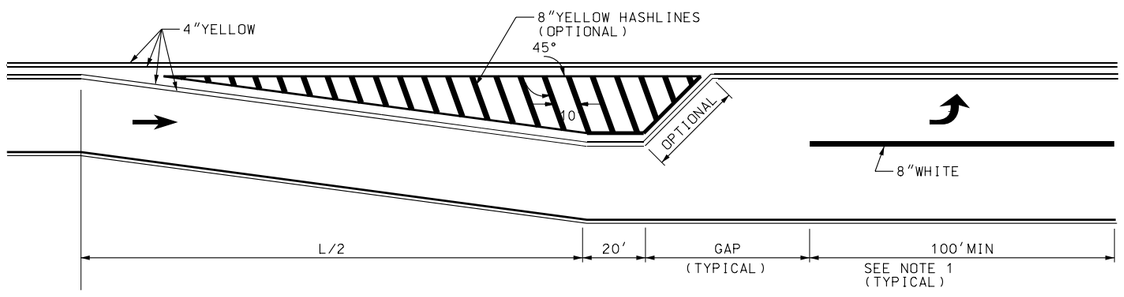
STD DWG
SL 13



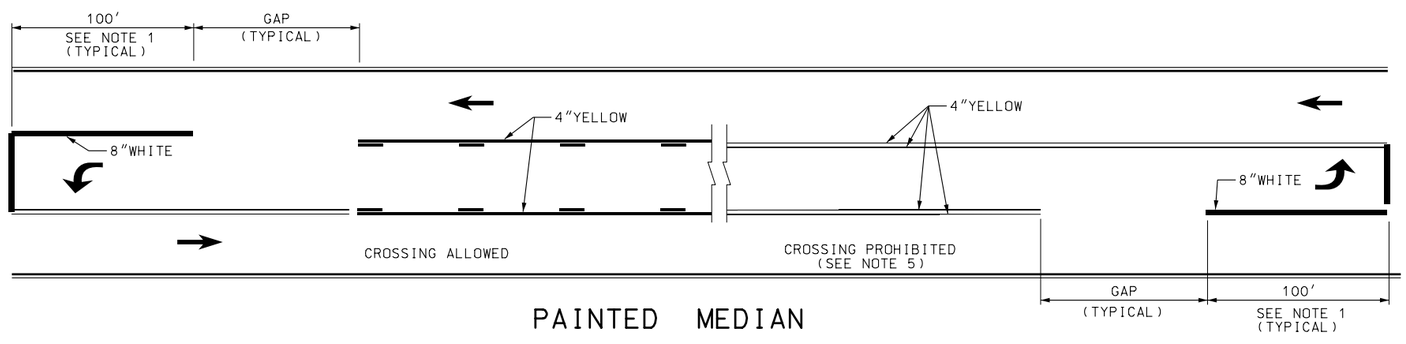
PERMISSIVE TWO-WAY LEFT TURNS



INTERSECTION LANE APPROACH



PAINTED LEFT TURN LANE



PAINTED MEDIAN

NOTES:

1. USE A CAPACITY ANALYSIS TO DETERMINE THE LENGTH OF STORAGE REQUIRED FOR TURN LANE. A MINIMUM LENGTH OF 100 FEET IS REQUIRED.
2. USE THE STANDARD ALPHABET FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS FOR PAVEMENT MESSAGES.
3. USE PAVEMENT MARKINGS CONSISTING OF ARROWS, THE WORD "ONLY" IN LANE, AND THE STANDARD SIGN R3-7R WHEN THE LANE IS A MANDATORY MOVEMENT.
4. PAVEMENT MARKINGS ARE OPTIONAL FOR MANDATORY LEFT TURN LANES AND TWO-WAY LEFT TURN LANES.
5. CREATE A CROSSING PROHIBITED ISLAND OR MEDIAN BY PLACING TWO DOUBLE YELLOW LINES FOR EACH DIRECTION (4 SOLID YELLOW LINES TOTAL)
6. TAPER FORMULA: L = SW FOR SPEEDS OF 45 MPH OR GREATER
   $L = WS^2/60$ FOR SPEEDS OF 40 MPH OR LESS.
7. FOR RAISED MEDIAN AND PLOWABLE END SECTION DETAILS SEE STD DWG GW 1

REVISIONS

NO.	DATE	APPR.	REMARKS
1	02/24/05	B.A.	NOTE REFERENCE CORRECTED IN UPPER LEFT DETAIL.
2	02/23/06	B.A.	CORRECTED TYPO IN NOTE 6.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

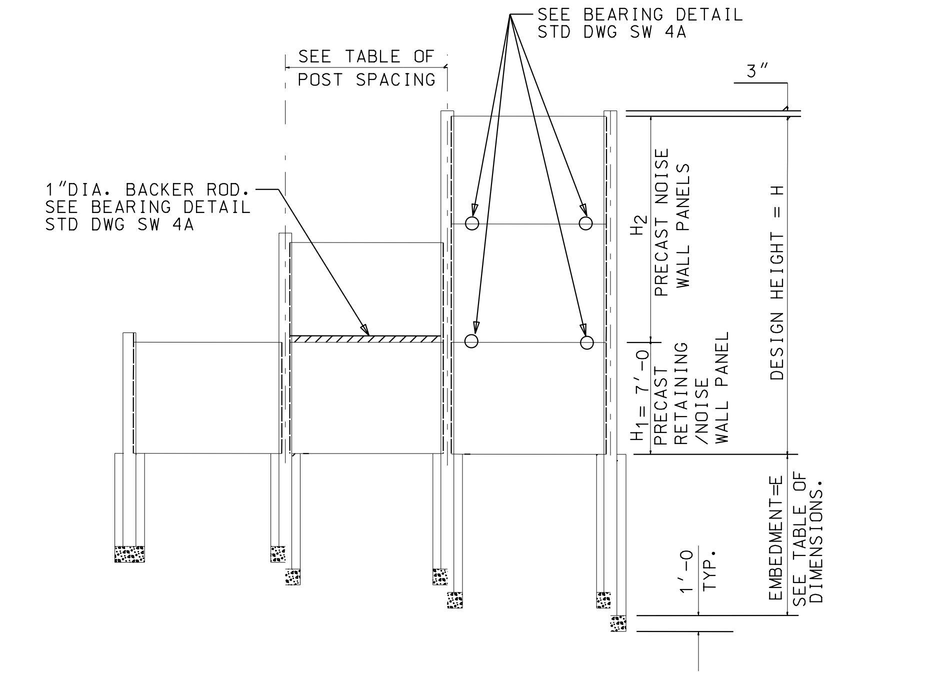
RECOMMENDED FOR APPROVAL — DEPUTY DIRECTOR — FEB.23,2006 DATE
CHAIRMAN STANDARDS COMMITTEE APPROVED — FEB.23,2006 DATE

PAINTED MEDIAN AND AUXILIARY LANE DETAILS

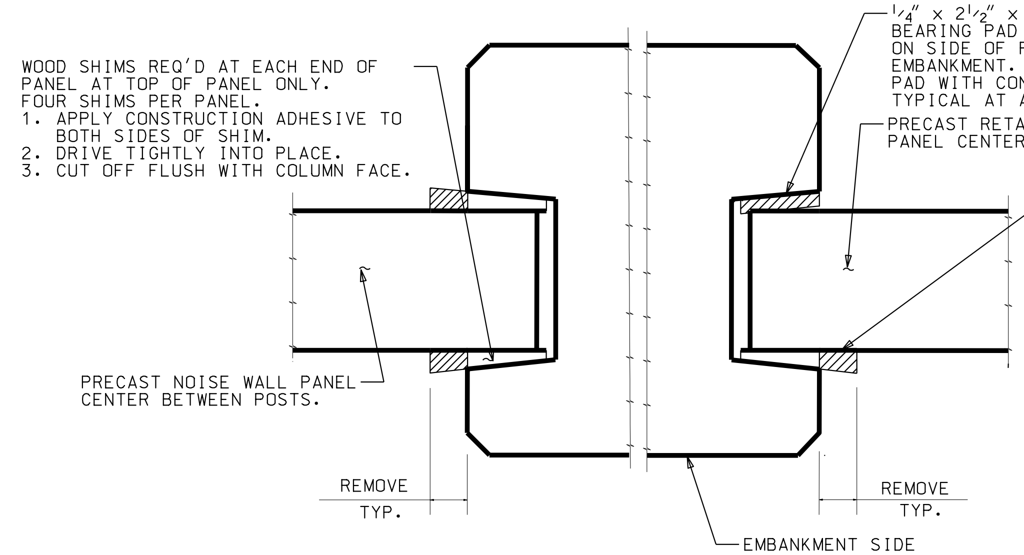
STANDARD DRAWING TITLE

STD DWG
ST 5

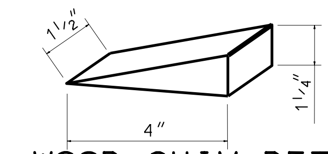
DGN File: L:\Standard_Drawings\Imperial\2005Approved\ChangesSApproved\st05.dgn
02-MAR-2006



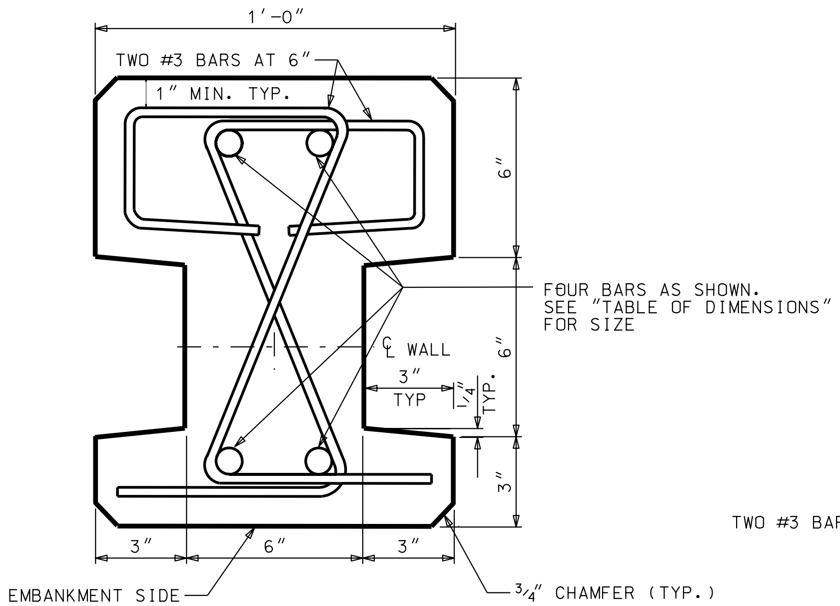
ELEVATION OF PRECAST RETAINING/NOISE WALL



POST/PANEL DETAIL

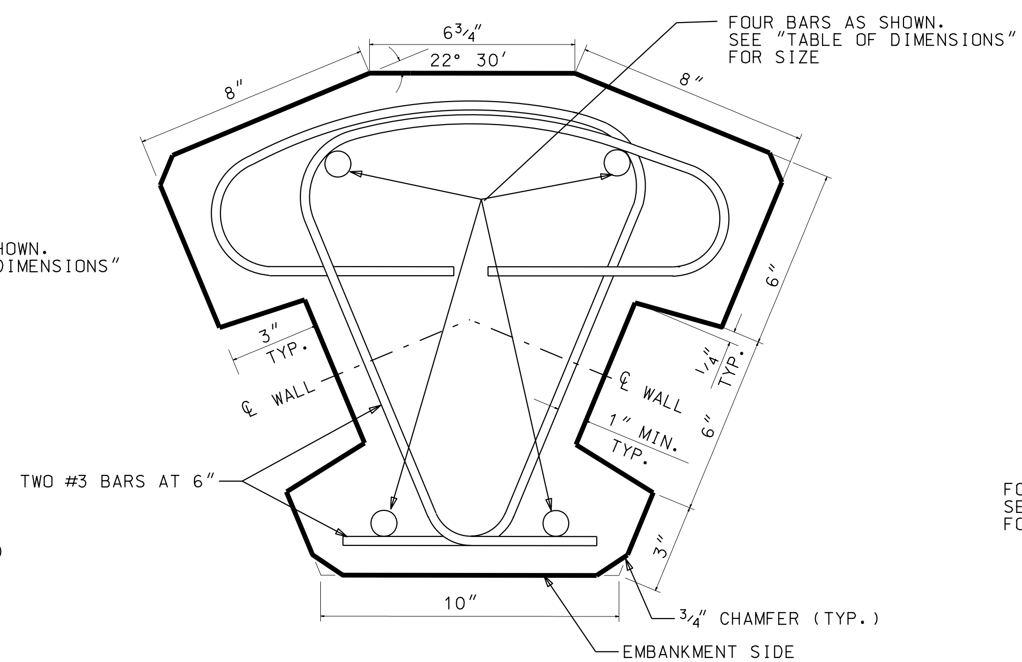


WOOD SHIM DETAIL



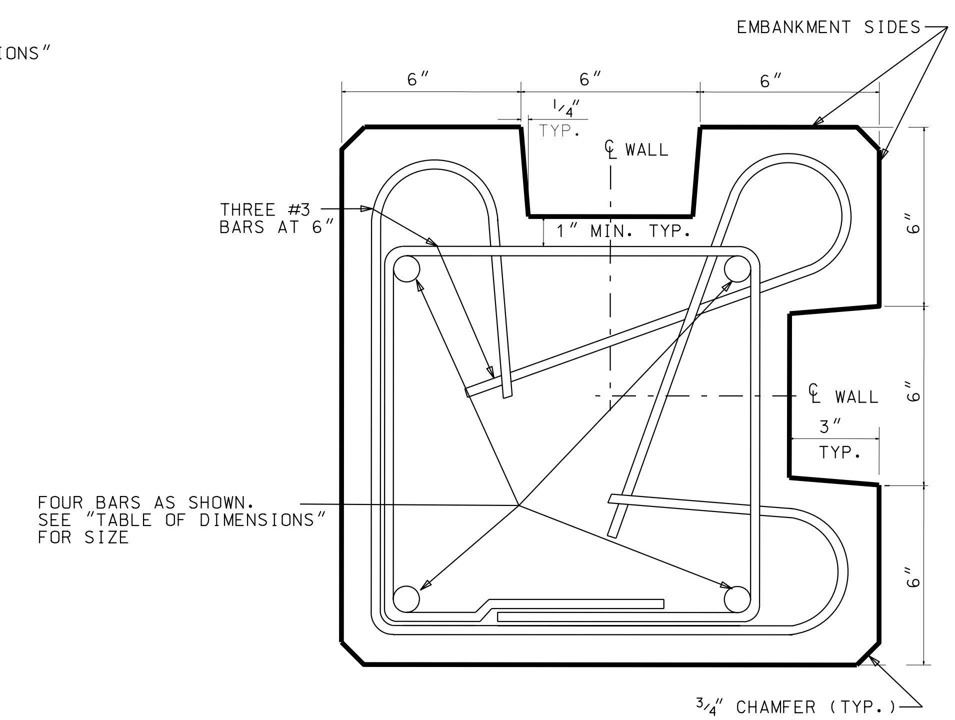
SECTION THRU TYPE I POST

θ=0° TO 10°



SECTION THRU TYPE II POST

θ=35° TO 55°

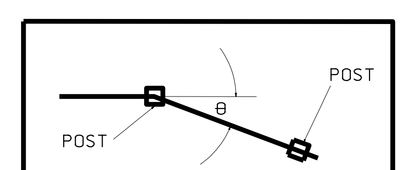


SECTION THRU TYPE III POST

θ=80° TO 100°

TABLE OF DIMENSIONS							
DESIGN H			PANEL HEIGHT			POST	
H1	+ H2	= H	TOP PANEL	CENTER PANEL	BOTTOM PANEL	VERTICAL BAR SIZE	EMBEDMENT "E"
7′		7′			7′	#7	4′-8
7′	3′	10′	3′		7′	#7	6′-8
7′	4′	11′	4′		7′	#7	7′-4
7′	5′	12′	5′		7′	#7	8′-0
7′	6′	13′	6′		7′	#7	8′-8
7′	7′	14′	3′	4′	7′	#8	9′-4
7′	8′	15′	4′	4′	7′	#8	10′-0
7′	9′	16′	4′	5′	7′	#8	10′-8
7′	10′	17′	5′	5′	7′	#9	11′-4
7′	11′	18′	5′	6′	7′	#9	12′-0
7′	12′	19′	6′	6′	7′	#9	12′-8

POST SPACING	
℄ POST TO ℄ POST	REQ'D SPACING
TYPE I TO TYPE I	12′-0
TYPE I TO TYPE II	12′-2
TYPE I TO TYPE III	12′-3
TYPE II TO TYPE II	12′-4
TYPE II TO TYPE III	12′-5



REVISIONS				
NO.	DATE	APPR.	REMARKS	
1	02/23/06	B.A.	CORRECTED PAD HARDNESS IN POST/PANEL DETAIL.	

UTAH DEPARTMENT OF TRANSPORTATION
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PRECAST CONCRETE RETAINING/NOISE WALL 2 OF 2

STANDARD DRAWING TITLE

STD DWG
SW 4B